


COMPUTERWORLD

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 **Mayo Clinic** surgeons practice on a computer before tackling surgery. The first in a weekly series of profiles of finalists for the *Computerworld Smithsonian Awards* appears on page 16.

Lotus/Novell merger was still being worked out late last week as the firms extended their deadline to finalize an agreement. Page 6.

Leasing doldrums claim another victim as TRW pulls the plug on unit that refurbishes computer equipment for third-party firms. Page 4.

Staying aloof from public utilities commissions regulatory proceedings may prove costly to communications services users. Page 129.

Those behind Windows 3.0 prepare for this week's event, while others scurry to catch the wave. Page 128.

Sun's low-cost, low-feature RISC workstation likely to open a floodgate to me-too price competitors by year's end. Page 127.

DB2 users not set to distribute

BY ROSEMARY HAMILTON
CW STAFF

Although the first piece of distributed DB2 was delivered to users last year, many large IBM shops are still wondering what to do with it.

A user interviewed recently at one advanced DB2 site claimed that the distributed functionality is too limited to accomplish much at this stage, so it has remained in a test phase.

However, many IBM users interviewed during the last month, including attendees at the International DB2 Users Group conference held in Chicago last week, said their plans for a distributed database environment are so long range that they have not yet determined an immediate need for this DB2-to-

DB2 connection.

“When [IBM] first introduces something, it is often a product that nobody wants,” said Jeff Tash, president of consulting firm Database Decisions, a divi-

sion of Hewitt Associates. “What IBM is more or less doing is shaking out the distributed capabilities first. . . . You can anticipate the next release will be

Continued on page 127

DB2 matchups

A majority of planned DB2 purchases are at MVS sites that currently use either no DBMS or are relying solely on a third-party product

Currently using:

3rd-party DBMS only	32%
No DBMS	27%
IMS/DB and 3rd-party	21%
IMS/DB only	9%
Other IBM and 3rd-party	8%
IMS/DB and other IBM	3%

Percent of U.S. IBM/PCM mainframe sites planning DB2 for 1990 (Base: 240)

Source: Computer Intelligence

CW Chart: John York

Fed policy dispute killing off foreign high-tech watchdog

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The Bush administration is phasing out Project Socrates, the Defense Intelligence Agency's computerized system for tracking foreign technology advances.

A U.S. Department of Defense spokesman said that, although the computer capability for Project Socrates will remain in place, there are no research studies scheduled after the one on high-definition television is finished in July.

“It's been basically put on the shelf,” said Michael C. Sekora, former director of Project Socrates. He recently resigned in frustration after a Reagan administration plan to strengthen the program was scrapped and the program's classified budget was cut by roughly 50%.

One source suggested that using the term HDTV — a lightning rod for supporters and crit-

ics of industrial policy — was the fatal flaw for Project Socrates. “Everybody associated with the term HDTV has been blown out of the water,” the source said.

Critics said the action was the Bush administration's latest assault on programs smacking of “industrial policy,” or government assistance for high-technology industries. “Mike Sekora had attempted to strengthen our nation's national security and industrial base. It is disheartening that he was blocked in this

Continued on page 8

Would Muzak improve over ISDN?

BY ELISABETH HORWITT
CW STAFF

Leading-edge networking technologies that are still consigned to the research and development basements of many Fortune 500 companies are rising to an operational level in the elevator business.

Otis Elevator, Inc., the U.S. market leader, and Schindler Holding Co., which leads the international market, are engaged in an escalating all-out battle to pipe in better service via such esoteric means as Integrated Services Digital Network and radio-frequency data terminals.

Otis has for several years enjoyed the sweet Muzak of fame — and growing revenue — through its computerized Otisline service center, as well as for a re-

mote elevator monitoring system that automatically alerts computer systems at the service center when maintenance problems occur.



Hal Mayforth

Low-price fever hits Compaq

LAN planners drawn to low-cost, 'quality' PCs

BY RICHARD PASTORE
CW STAFF

In an unprecedented bow to the cost-conscious personal computer market, Compaq Computer Corp. is expected to announce today six systems priced as low as \$1,700. Users cheered the news last week, saying it will give them an economical yet high-quality alternative for network nodes.

Two Compaq system families, which are reportedly already on their way to authorized dealers, are based on Intel Corp.'s 80286 and 80386SX microprocessors. Each is available in three configurations: diskless, with a single floppy disk drive and with a 40M-byte hard disk and floppy drive.

Starting at \$1,699, the new machines' prices (see chart page 6) are 23% to 38% lower than Compaq's previous bottom-of-

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Quotable

"We have agencies that are concerned about public health, consumer protection, civil rights, mine safety, battle monuments and marine mammals. But no agency is devoted to privacy."

ROBERT E. WISE JR.
U.S. REPRESENTATIVE

*On a proposal for a U.S. Data Protection Board.
See story page 14.*

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T

here's a peculiar relationship between ethical standards and salary: Specifically, the more you make, the lower your standards. At least that's what a recent survey of 200 executives by Robert Half, a recruitment specialist, suggests. The execs were asked to rank different professions according to their level of ethics. Tech types (engineers) and bean counters (CPAs) were rated as having the highest ethics, while doctors, lawyers and dentists trailed on the ethics list. Who's at the very bottom of the pile? Why, investment bankers, who garnered a less than 1% vote of confidence from the survey sample.



High-tech hurdles bar universal use of image compression on PCs, but progress is being made. Page 17.



Andy Freeberg
French bank Credit Lyonnais' Don Wymer helps leverage database machine technology. Page 35.

EXECUTIVE BRIEFING

■ **The wait goes on for true distributed databases** in the IBM DB2 arena. The distributed features of DB2 reportedly allow only limited communication between database systems. But that may not be a major problem for most users, because their need for DB2-to-DB2 connections are far down the road. That was one of the subjects of discussion at the International DB2 Users Group conference last week. **Page 1.**

■ **'Get involved' has long been a rallying cry** to common citizens a role in government. There may be times when smaller corporations have to get involved, too, as some large telecommunications users appear to be discovering. Those companies are worried and confused about trends in public utility commission rulings that affect them. **Page 129.**

■ **It looks like double-duty time for portables**, as manufacturers dress them for the desktop with Intel 80386 chips and expansion chassis, as well as external keyboards and screens. Most people, however, say these machines are at their best when they're used as traveling gear. The extra power in a smaller package is appreciated by frequent fliers, but office-bound folks accustomed to their hefty desktop machines are not ready to trade in power and comfort for the consistency of having one machine. While you can attach larger screens and keyboards, there's a price premium involved that outweighs the desktop. **Page 81.**

■ **Instability in the computer leasing industry** is causing fallout in related fields. One victim is TRW/Techserv, a large systems refurbisher and maintenance service company, which has closed its doors in part because some of its leasing industry clients folded and in part because of its own over-expansion. **Page 4.**

■ **It's the ultimate vertical market battle**, as Otis Elevator, Inc. and Schindler Holding Co. compete for the leadership role in the elevator business. Technology such as ISDN is among the weapons in the elevator wars. **Page 1.**

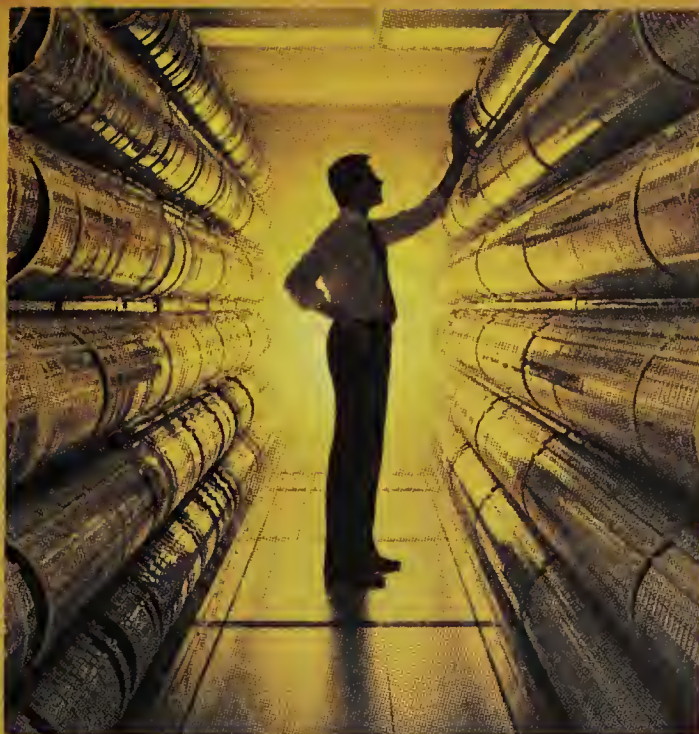
■ **ISDN won over another disciple**, Northeast Utilities, recently. The Connecticut power firm is testing an automatic number identification application that gives a service representative an on-line look at a customer's name, telephone number and address when the customer calls in. **Page 128.**

■ **Applications such as Northeast's** will become more common if IBM has its way. The vendor last week expanded the scope of its Call-path Services Architecture, which supports links between PBX systems and mainframes and minis. **Page 10.**

■ **Don't always try to re-engineer** business processes with new technology. The Workers' Compensation Board of Ontario attributes its successful implementation of an imaging system to its mandate to simply replicate the paper system while replacing it. **Page 73.**

■ **The prospect of a federal privacy board** took shape last week when several witnesses told Congress of their concern about businesses that build databases on consumers. **Page 14.**

■ **On-site this week:** Hospital Corporation of America prescribed departmental minicomputers for its users long before it was fashionable, hooking NCR Towers to a central IBM 3090. **Page 31.** Relational database is *le mot juste* at Credit Lyonnais, which uses a Sharebase system to track its U.S. accounts. The DBMS allows credit managers to access DEC VAX customer files from Apple Macintoshes. **Page 35.** At Rockwell International, a different Macintosh — Information Center Supervisor Rebecca MacIntosh — is leading applications programmers away from the mainframe. Rockwell has installed Programmer Workstations, which run a suite of PC-based CASE tools under Mozart Systems' Mozart shell. **Page 47.**



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TRW leaves leasing industry in lurch

Overexpansion and IBM competition kill off system refurbishing unit

BY NELL MARGOLIS
CW STAFF

The perils of life in the computer leasing industry claimed another victim earlier this month as large systems refurbishing and maintenance service provider TRW/Techserv closed its doors on some 300 customers and six years of red ink.

Techserv "just wasn't performing at the level we expected," said James Boyle, general manager of TRW, Inc., which acquired Techserv in 1984.

The decision to shut down Techserv's facilities in Rockaway, N.J., and Elk Grove, Ill., and to sell its Roland Park, Calif., operation to competitor Infinite Computer, Inc. in Northridge, Calif., sent customers packing.

"We had about 210 pieces of [computer] machinery in Illinois and another 150 in New Jersey when we got a notice that gave us five days to move it all out," said Fran Wilkie, director of operations at Techserv customer Computer Equipment Investors, Inc. in Hackensack, N.J. "This is costing us a fortune."

Wilkie said her company has

already begun negotiating arrangements with other refurbishing and maintenance firms. Executives at several of the firms that used to number themselves among Techserv's arch-competitors last week reported phone lines jammed with calls from among the leasing firms that, until now, were Techserv customers.

However, several industry members and observers noted that the absence of Techserv, which one refurbishing executive said "served just about every com-

puter leasing company you could name," leaves lessors in need of such services with one fewer place to turn other than IBM.

Industry observers pinned a large portion of the blame for Techserv's demise on the factors that are stacking up as the twin scourges of the computer leasing sector: overexpansion and IBM Credit Corp. (ICC).

In refurbishment and mainte-

nance of leased computers, as in leasing itself, the climate is chilled by "a lot of competition for a shrinking base, with ICC playing an increasing role," Boyle said. "There's still business for independent lessors — but the higher margin business has been virtually swallowed up by ICC."

It is not only ICC giving computer lessors the blues these days, said Wayne Robbins, a former Techserv employee and independent consultant who recently co-founded his own refurbishing and maintenance firm. IBM itself, through its national service division, is claiming a lot of refurbishing turf, he said.

If the ICC-embattled air in the leasing sector cut short Techserv's life span, so did Techserv's own taste for runaway expansion. Particularly during the 1986-88 period, Boyle said, "explosive growth got beyond the abilities of management."



Cray unveils entry-level, 'air-cooled' supercomputer

BY ELLIS BOOKER
CW STAFF

MINNEAPOLIS — With a price tag ranging from \$2.2 million to \$5.8 million, Cray Research, Inc. last week introduced its Y-MP2E "starter" supercomputer as a stepping-stone to its larger systems. Company officials downplayed its strategic function as a defense to "minisuper" technologies from other vendors.

The Y-MP2E is less than half the price of the smallest machine in Cray's existing Y-MP line. Unlike that line, which requires liquid refrigerant plumbing, the 2E uses a self-contained cooling apparatus; it can also be tied into standard water-cooling plumbing. Cray said it hopes to deliver the first Y-MP2E to a customer in October.

"It opens up the possibility of real supercomputing to a much wider community of users," said Cray Chairman and Chief Executive Officer John Rollwagen at the company's annual shareholders' meeting.

Other Cray officials in Minne-

apolis described the new model as an "entry point" to Cray's larger machines, which can cost \$20 million. But they rebutted the idea that the Y-MP2E is a defensive product that will protect Cray's market from minisuper-computer vendors whose ma-



Paul Shambroom

Cray's Y-MP2E sets new price point

chines are less powerful but less expensive than Cray's offerings. "You can't make a business killing the competition," said Cray Senior Vice-President of Marketing Edward A. Masi. "You make it by growing customers."

"The first and most obvious customer will be existing Cray 1

or Cray X-MP users," Masi said. He added that this migration will be attractive because "we estimate maintenance, power and cooling costs for the SE will be 70% less [than the X-MP] over five years."

Nevertheless, comparisons with the C-240, the top-of-the-line minisupercomputer sold by Richardson, Texas-based Convex Computer Corp., abound in the 2E literature. Cray stated that the single-processor 2E is 3½ to five times faster than the four-processor C-240, which also lists at \$2.2 million.

Convex officials said the performance comparisons are distorted and pointed out that the new Cray is still far more expensive than their average \$1 million systems.

Convex co-founder and Senior Vice-President Steve Wallach also said Cray's claims of an "air-cooled" supercomputer are deceptive. Wallach also pointed out that the system actually relies on the same refrigerant used in the larger Y-MP models but employs a separate air- or water-cooled system, called a heat exchange unit, to remove the heat.

Nevertheless, analysts and existing Convex and Cray customers said that Cray had made the right move by bringing out an entry-level machine.

"They finally realized where they were weak in the market," said Jane Barutt, a schedule development analyst at Northwest Airlines in Minneapolis. Last April, Northwest purchased a

An uncomfortable corporate culture fit between huge corporate TRW, an approximately \$2.8 billion conglomerate headquartered in Cleveland, and the previously entrepreneurial Techserv exacerbated management problems, said Sandy Bowman, a leasing industry analyst at San Jose, Calif.-based market research firm Dataquest, Inc.

Several observers said last week that the crash landings that have marred the leasing landscape of late were instrumental in bringing down Techserv.

The TRW division "took a lot of hits from companies that folded and ended up taking a lot of bad debts," said John Lavin, who worked for the firm in its pre-TRW incarnation and is now president and co-founder of Classic Blue Computer Services, Inc., a refurbishing and maintenance firm in Randolph, N.J.

Fallen leasing companies including ICS Cybernetics, Inc., Unicom Computer Corp. and Continental Information Systems, Inc. owed substantial sums to Techserv, he said. "I don't see how [Techserv] had a chance," Lavin said.

In the final analysis, TRW did not see it, either. "Techserv was a roller coaster ride at best, and the descent was not always thrilling," Robbins recalled.

Convex C-220 over a Cray to handle its computationally intensive flight-crew scheduling application.

"It makes a lot of sense for Cray to have a computer a little easier to install and maintain," said Dieter Fuss, deputy associate director for computation at Lawrence Livermore National Laboratory in Livermore, Calif.

The 2E can be configured with one or two processors. Like the bigger systems, the 2E runs Unicos, Cray's implementation of AT&T Unix System V. The memory configurations for the 2E can have 16 million, 32 million or 64 million words of memory. A 128 million-word version is planned, Cray said.

CORRECTION

Power Systems & Controls, 804-355-2803, was omitted from the April 23 Product Spotlight chart on uninterruptible power supplies of 15 kVA and higher. The kVA range for the company's whole product line is 200 kVA to 1,250 kVA. The Hybrid UPS has an input voltage of 208, 480 or 600 VAC, with a tolerance of 20%. Output voltage is 208, 480 or 600 VAC, with a 1% tolerance. It operates at a frequency of 50Hz or 60Hz and has a total harmonic distortion of sine wave output of 5%. Runtime for full and half loads is user-specified, and the product has no built-in battery. Base price is between \$120,000 and \$175,000.

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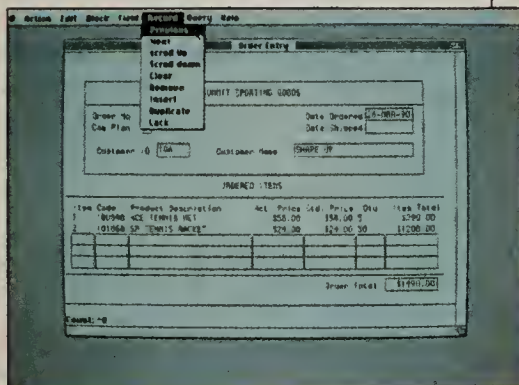
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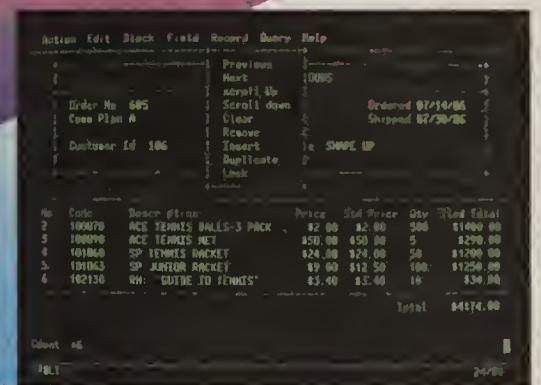
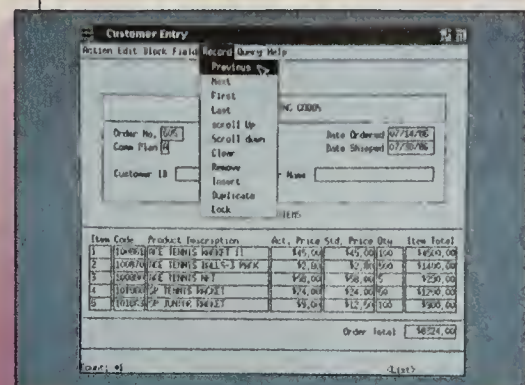
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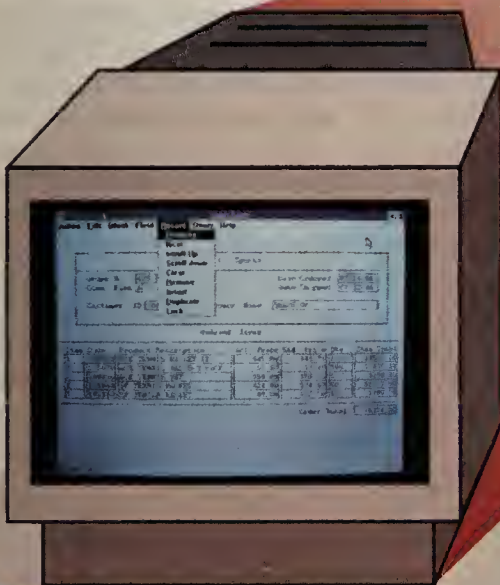
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Mips' Netware option cheered

BY JIM NASH
CW STAFF

SUNNYVALE, Calif. — Mips Computer Systems, Inc.'s announcement last week that it will begin shipping Novell, Inc.'s Portable Netware as an option on its workstations and servers by year's end was met with excitement by information systems managers now straddling Unix and non-Unix networks.

Mips Computer will port, enhance and resell its own version of Portable Netware to systems integrators, OEMs and value-added resellers. Portable Netware is the Unix version of Novell's Netware 386 operating system, which offers advanced network security as well as print

and connectivity services.

"Any step that moves us toward connecting dissimilar platforms is extremely important," said Greg Scott, network manager for the college of business at Oregon State University. Scott said the business college has about 2,000 Novell-supported workstations and 800 to 1,000 Unix-based workstations.

Chuck Sears, a colleague of Scott's and network manager at Oregon State's oceanography college, said he is volunteering the college as a beta-testing site for the product.

"For us, this is a very attractive product," Sears said. He explained that the college has 75 Unix-based workstations and about 50 personal computers.

Sears added that the number of PCs could double if he were able to use a Mips Computer server with Portable Netware as a link between the two networks.

Michael Szabados, marketing director of networking communications at Mips Computer, said he sees more value in spreading reduced instruction set computing technology through Netware connectivity than in linking PCs with Unix boxes.

Sunnyvale, Calif.-based Mips Computer is one of about a dozen firms licensing Portable Netware. Only two, NCR Corp. and Data General Corp., are currently shipping licensed products, according to Curt Johnson, product line manager for Portable Netware.

Pact stalls Lotus merger

"Cosmetic" changes and unanticipated complexity forced a short delay in presenting a formal merger contract between Lotus Development Corp. and Novell, Inc.

"For a lawyer, this is like getting a good-size software to cook," said Carey Heckman, vice-president and senior corporate counsel at Provo, Utah-based Novell.

Heckman said the agreement in principal to join the software giant to the networking leader was to have been signed Friday, three days after originally targeted.

"It took longer to fully understand each other," he said, "and we want to do it right." Heckman added that there would be a few "cosmetic" changes in the

deal structure when completed but no major revisions to the intended agreement as stated in April. He said he still expects the contract to be accepted by each company's boards of directors and shareholders in time for the targeted closing date in July.

Under the terms of the agreement, Lotus, based in Cambridge, Mass., will issue 41 million shares, and Novell shareholders will get 1.19 Lotus shares for each share they tender.

Persistent rumors about growing misgivings among Novell employees continue to circulate despite firm denials by company executives. And Novell stock continues a slow recovery after an initial 10% drop following the April announcement.

Compaq

CONTINUED FROM PAGE 1

the-line 286 and 386SX prices. They are also a lot closer to what traditional low-price vendors charge for comparable machines. For example, AST Research, Inc.'s diskless Bravo PC costs \$1,000, and its 40M-byte model costs \$1,695.

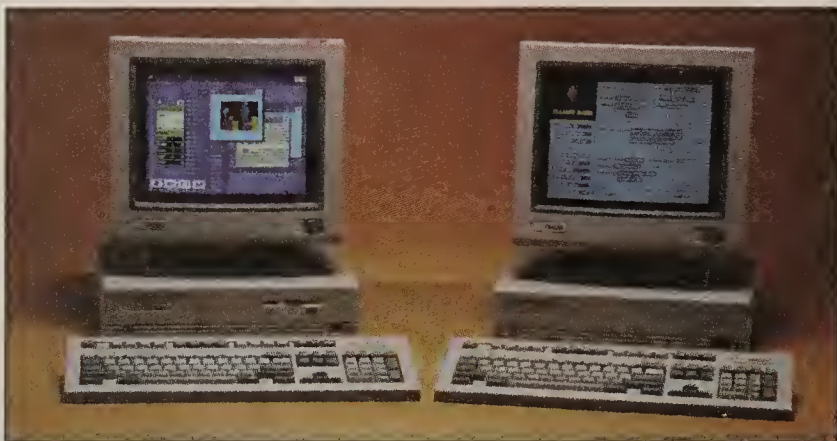
Information systems managers said Compaq's low pricing gives them economical options. Accounting firm Coopers & Lybrand prefers Compaq PCs as nodes, said Stephen Rood, microcomputer technology manager. "But if you buy a full-blown Compaq, it could run you \$5,000 or \$6,000; that's a cost issue I can't ignore," he said.

Analysts see the new workstations as an effort by Compaq to capture sales that have been shifting to low-priced, second-tier clone makers. "This is a direct assault" on firms such as AST Research and Dell Computer Corp., said Frank Mischnoff, an analyst at Meta Group, Inc. in Westport, Conn.

Mike Swavely, president of Compaq North America, conceded in an interview earlier this year that Compaq was losing node sales to its low-end competition. "Many customers want minimal functionality at low cost. Our current PCs deliver more

Network tie-ins

Compaq's latest personal computers are available in diskless configurations



Model	Diskless	1 floppy disk drive	40M-byte hard disk and floppy drive
Deskpro 286N	\$1,699	\$1,799	\$2,599
Deskpro 386N	\$2,299	\$2,399	\$3,199

Source: Compaq

CW Chart: Marie Haines

functionality than they are willing to pay for," Swavely said.

Though Compaq said the latest units are ideal for stand-alone applications, the boxes incorporate first-time features to optimize their use as network nodes. Security features include power-on passwords and a switch on the system board that sets and locks the system configuration.

Each PC comes with 1M byte of system memory expandable to 13M or 16M bytes, depending on the model.

"It's the right machine at the

right price," said Leslie Fiering, a Gartner Group, Inc. analyst who was briefed by Compaq. "The market definitely wants a low-end workstation to use as a node on the LAN."

At Mellon Bank NA in Pittsburgh, Executive Vice-President George DiNardo has been hesitant to replace the bank's 70,000 dumb terminals. But he said Compaq's diskless PC "gives me a reasonably inexpensive alternative to a dumb terminal. It's a good in-between step from a 3270 to a full-blown PC."

Presto! Unisys pulls out modular board/workstation

BY RICHARD PASTORE
CW STAFF

Unisys Corp. pulled several personal computers out of its announcement bag last week, including its first high-end Intel Corp. i486-based box. But probably its most unusual offering was a modular board that, when attached to the back of a monitor, becomes an Intel 80286-based diskless workstation.

The board itself contains a 10-MHz 286 chip, 1M byte of system memory, video, read-only memory and Ethernet network circuitry. The board clips to the back of the supplied IBM Video Graphics Array (VGA) monochrome monitor, eliminating the chassis footprint of the traditional workstation.

"Eliminating the footprint and putting it behind rather than on the desk is a good idea," said Jack Karp, an analyst at Meta Group, Inc. in Westport, Conn.

The hardware comes with DOS 4.01 and Microsoft Corp.'s Windows/286 preloaded. Also crammed onto the board are parallel and serial ports, a mouse port and room for an optional math coprocessor. The unit con-

tains no cooling fan, so operation is silent, Unisys said.

This workstation, dubbed the LAN Workstation 286, is intended for users who require low-cost network nodes with the security afforded by a diskless configuration. Available now, the system retails for \$2,395.

Unisys also unveiled its first 486 box last week. The 25-MHz IBM Personal Computer AT-style bus machine is intended as a multiuser Unix system or local-area network server. The system will support up to 32M bytes of random-access memory and 640M bytes of small computer systems interface (SCSI) hard disk capacity. Configured with a 140M-byte hard disk, a 3½-in. floppy disk drive and VGA monochrome monitor, the system costs \$13,748.

Unisys also announced two PCs based on Intel's 80386 chip. Both units feature the AT-type bus and support SCSI. The 800/33A runs at 33 MHz and ships with 4M bytes of memory and 64K bytes of cache. It is priced at \$6,800.

The 500/20A runs at 20 MHz, offers 2M bytes of RAM and is priced at \$3,795.

Diskless PCs: The shape of things to come?

BY RICHARD PASTORE
CW STAFF

Diskless personal computers make for extremely cheap and secure network nodes. But before Unisys Corp.'s and Compaq Computer Corp.'s announcements (see stories above and page 1), users had few options, since only a handful of vendors serviced this specialty market.

The reason, apparently, is user preference for local storage. "PC users are hooked on having local storage," said Frank Mischnoff, an analyst at Meta Group, Inc. in Westport, Conn.

The need for low-cost, low-function machines to act as nodes and replace dumb terminals will soon outweigh user preferences, observers said. "This low-end diskless market

will heat up over the next 12 to 18 months. I think you'll see everybody playing here," predicted Meta Group analyst Jack Karp.

"We haven't experimented much with diskless systems because they don't offer us the flexibility," said William Tignanelli, assistant vice-president at the Federal Reserve Bank in Baltimore. But Tignanelli said he

would consider using diskless PCs "to keep the price of the LAN down."

For environments in which the data is sensitive — banks and insurance firms, for example — the security afforded by diskless machines is another motivating factor. "We're starting to put more departmental systems on networks, so I could see using diskless PCs for security," Tignanelli said.

At James River Corp., diskless PCs could figure into plans

to implement consistent, networkwide security, according to Mike Roberts, director of MIS at the Richmond, Va.-based paper manufacturer.

Despite growing demand, diskless PCs probably will not outsell traditional boxes anytime soon, observers agreed. For example, AST Research, Inc. offers a diskless model in its entry-level Bravo line, but a spokeswoman said the biggest seller in the line does incorporate a floppy disk drive.

Self-healing services a response to disasters

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Responding to an escalating level of user demand for reliable disaster recovery services in its local loops, US West Communications last week introduced self-healing services for high-capacity private-line customers in US West regions.

Driven by events such as Hurricane Hugo, the San Francisco earthquake and the Hinsdale, Ill., fire, all of which wreaked havoc with local carrier service, "the user community has taken a stance. 'We've talked enough; let's take some ac-

tion and stop this exposure to outages,' " said Tom Pardun, vice-president for large business services at US West.

Self-healing was given the highest priority on average by 335 users who responded to a recent survey by New York research firm Frost & Sullivan, Inc., which asked what intelligent network features they deemed most important.

US West announced fiber-optic-based network services that are said to provide users with 99.9% availability through such features as the following:

- Routing through two central offices, so that if a disaster such as the Hinsdale fire hits one office, the other can still handle

customer transmissions.

- A dual-channel fiber-optic ring that automatically routes transmissions onto the backup line and can circumvent both node failures and cable breaks.

- A self-monitoring network management system that automatically reroutes transmissions when failures occur or when network degradation reaches a predetermined level.

Self-Healing Network Services dedicates an entire fiber-optic network to each customer and is geared to companies whose traffic requires multiple 45M bit/sec. DS3 lines linking multiple metropolitan-area locations, US West said.

IBM has signed up for the dedicated version of US West's offering to serve its Boulder, Colo., site. This facility operates customer networks, handles all transactions connected with IBM's import and export business and provides software development and analysis of component failures. The center needs "reliability in the range of 100%," said Ken Gambon, manager of Enterprise Alliance for IBM U.S. Marketing.

Customers will pay a premium for the self-healing services, which amounts to 30% to 50% higher rates than "plain vanilla, unprotected services," Pardun said. "But that's a lot less expensive than a fully redundant system."

US West will begin the initial, five-city deployment of its service in September.

Two arrested in export violation

BY SALLY CUSACK
CW STAFF

MIAMI — Two West Coast computer traders were arrested by U.S. Customs Service officials last week for an alleged attempt to ship an ETA 10 supercomputer to Bulgaria.

Robert Wheeler, president of American Technology Trading Group Ltd. in San Francisco, was arrested in Charleston, S.C. His reputed accomplice, Nick Spiliotis, president of C.I.D. Corp. in Long Beach, Calif., was arrested shortly thereafter at Miami International Airport, where he was arriving from Charleston to collect a \$1 million payment, according to customs officials.

Rick Bergland, a spokesman at Minneapolis-based Control Data Corp., said the company, which closed its ETA Systems subsidiary in April 1989, is no longer manufacturing or selling supercomputers. ETA's inventory was transferred to Adaptive Systems Corp., a computer brokerage house in St. Paul, Minn.

Michael Sheehan, a Customs Service spokesman in Miami, said the investigation began last January when customs received a call from a computer broker who claimed to have been approached by Wheeler and Spiliotis. The men, the broker said, claimed they had procured a supercomputing machine that was wired at 50Hz for the European market, and they were looking for interested buyers.

Working under the direction of the Customs Service, the broker told the pair that he had lined up an interested party in Bulgaria. Discussions followed concerning Eastern European regulations and documentation requirements, and Spiliotis and Wheeler assured the broker that forging any of the necessary documentation would present no problem, according to the charges.

The deal was allegedly finalized when a purchase price of \$1 million was agreed upon, and the computer was sent to the Port of Charleston on May 14 to be readied for direct cargo shipment to Marseilles, France, where the buyer was scheduled to retrieve it. Customs officials said the computer was seized in Charleston.

Both men have been charged with violating the Export Administration Act, which carries a maximum penalty of 10 years and/or a \$1 million fine.

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NEWS SHORTS

IBM wins 'Buy American' appeal

A federal appeals board last week upheld a protest by IBM that said federal procurement regulations unfairly discriminate against some of its products. IBM had complained that provisions of the 1933 Buy American Act barred sale to Uncle Sam of some of its new RISC System/6000 computers because, although they are made in the U.S., they are more than 50% by cost made from foreign parts. Similar machines made overseas are judged by a less stringent standard embodied in the 1979 Trade Agreements Act, IBM said. The board agreed and issued a ruling that will, for most federal procurements, treat equipment in accordance with the 1979 statute.

Supercomputing showroom opens

Offering small companies the chance to "test drive" advanced technologies such as supercomputing and imaging, the University of Illinois at Chicago recently opened the Software Technologies Research Center. Funded with major grants from AT&T, IBM and the state of Illinois, the center will provide one-day training seminars as well as facilities for long-term research and development projects on a contractual basis. The center will focus on visualization of vast amounts of computer data.

Cray, Fujitsu talk license

Cray Research, Inc. and Fujitsu Ltd. are negotiating to conclude a cross-licensing agreement for supercomputer technology, Yoshikazu Hori, president of Cray Research Japan Ltd., said last week. Hori would not comment on details of the current negotiations, though he said the deal would be similar to one reached in May 1989 with Hitachi Ltd. for an overall exchange of technology information. The recent round of negotiations began last month.

HP replaces low-end PC

Committing itself to the short-term future of personal computers based on Intel Corp.'s 80286 processor, Hewlett-Packard Co. is replacing its 2-year-old Vectra ES/12 with another 286-based Vectra, the 286/12. The new PC has better graphics capability, a faster cycle time and more main memory, with the base price \$100 over the earlier model at \$2,399, the company said.

Sears wins Treasury pact

Sears Business Systems won a contract worth \$400 million to provide and service an estimated 75,000 desktop and laptop PCs for the U.S. Treasury Department. The contract also calls for thousands of printers, disk drives and software packages. Sears will supply PCs made by Apple Computer, Inc., IBM and Everex Systems, Inc.

Cap Gemini migrates IDMS code

Cap Gemini America last week announced Artificial Intelligence Migration, a tool-driven service designed to migrate IDMS programs to IBM's DB2 database management system. Cap Gemini's system converts software written for Computer Associates International, Inc.'s (formerly Cullinet Software) IDMS into SQL with automatic analysis of the program's structure and logic, said Noah Ross, Cap Gemini's director of conversion engineering. "In the past, this could only be done efficiently by having engineering experts manually study each program to make translation decisions. What we have done is taken the intelligence of a lot of our experts and put it in our intelligence system," Ross said.

Sun shines up to GE

General Electric Co. last week chose Sun Microsystems, Inc. to supply Unix-based workstations and servers to its 13 business units, which include NBC, Kidder, Peabody and GE Medical Systems. Sun officials estimate revenue of \$50 million to \$100 million from the purchase agreement with GE.

More news shorts on page 128

Coalition calls for trade reform

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — A coalition of some of the nation's largest computer companies last week called for reform of anti-dumping laws and of trade policies dealing with access to foreign markets.

The Computer Systems Policy Project (CSPP), an 11-member group that accounts for \$120 billion in annual sales, outlined a four-point proposal that would relax antidumping penalties that are contrary to the interests of the U.S. computer industry and beef up sanctions against foreign companies that are repeatedly found to price unfairly.

CSPP opposed penalties for dumping when there is no domestic alternative for the foreign product being dumped. The group also called for deferral or suspension of antidumping duties on products in short supply.

In those cases, duties imposed as penalties punish domestic buyers while doing little to inhibit further dumping, said Rod Canion, chief executive officer of Compaq Computer Corp., at a press conference here to announce the first in a series of public policy recommendations from CSPP.

In addition, CSPP called for revisions to U.S. law and to the General Agreement on Tariffs and Trade that would give foreign companies more flexibility in pricing semiconductors and other items.

CSPP proposed allowing pricing below-unit costs early in a product life cycle and allocation of capital and research and development costs over a product's life. The ability to engage in such forward pricing would be less likely to trigger a finding by the U.S. Commerce Department that a foreign product is priced below fair market value in the U.S., according to CSPP.

Antidumping duties

The computer coalition also called for the imposition of antidumping duties for second offenders retroactive to the date that the antidumping investigation began and to two years before that for third-time offenders.

Andy Procassini, president of the Semiconductor Industry Association, said SIA was generally

in agreement with the CSPP proposals. In particular, CSPP's approach to market access is exactly the same as SIA's, he said.

Procassini also said CSPP's proposals for accounting for product start-up costs was reasonable as a "starting point." But he added that the proposals for limiting antidumping penalties involved "difficult issues" and would require further discussion and clarification.

Scott McNealy, president of Sun Microsystems, Inc., said, "We're not trying to change the rules but rather to make sure that our trading partners abide by the rules."

To improve access to foreign markets, CSPP proposed several steps, including the establishment of bilateral agreements and the use of government-imposed sanctions against closed markets.

CSPP, formed one year ago, consists of the chief executive officers of IBM, Digital Equipment Corp., Hewlett-Packard Co., Tandem Computers, Inc., Apple Computer, Inc., Cray Research, Inc., NCR Corp., Unisys Corp., Control Data Corp., Compaq and Sun.

Fed policy

FROM PAGE 1

attempt," said U.S. Sen. Jeff Bingaman (D-N.M.).

Sekora resigned on April 20, the same day that Craig Fields, director of the Defense Advanced Research Projects Agency and an advocate of assisting high-tech industries, was transferred to a low-profile job [CW, April 30].

Project Socrates was designed to systematically monitor foreign developments in key technologies, such as superconductivity and microelectronics, for government decision-makers. Sekora had developed a network of technical experts at research laboratories who evaluated the importance of foreign technology.

The database and custom software were used on a local-area network of Intel Corp. 80386-based microcomputers or on Digital Equipment Corp. VAX 11/780s, depending on the complexity of the analysis, Sekora said.

Sekora left the Defense Department to form a consulting firm, Technology Strategic Planning, Inc. in Stuart, Fla., that he said will expand on the Project Socrates concept. In addition to monitoring foreign technology, the new company will develop countermeasures to make U.S. companies more competitive, he said.

"Every nation's technology

should be viewed simultaneously as a resource and as a threat," Sekora said, adding that technology breakthroughs occur not only in Japan, but in Australia, Brazil and a host of other industrialized nations.

Project Socrates lost its high-level Pentagon supporter, Robert B. Costello, at the end of the

search fellow at the Hudson Institute in Indianapolis.

Costello argued that the Defense Department should be supporting "dual-use technologies" that can be used by the military and commercial sectors. "People that believe the defense industrial base can be nurtured and supported separate from the

The losing edge

With U.S. technology losing ground, the Bush administration has scrapped a Department of Defense computerized project for tracking foreign advances

Technology	U.S. standing vs. Japan	
	1989	Trend
• Artificial intelligence	Ahead	Holding
• High-performance computing	Ahead	Losing
• Flexible CIM*	Even	Holding
• Superconductors	Even	Losing badly
• Advanced semiconductors	Behind	Losing
• High-density storage	Behind	Losing
• Digital imaging	Behind	Losing badly

* Computer-integrated manufacturing

Source: U.S. Department of Commerce

CW Chart: John York

Reagan administration. Costello, who was undersecretary of defense during the Reagan era, had wanted to beef up the program by transferring it from the Defense Intelligence Agency to his own office.

He said the Socrates database is an important tool for determining how defense should spend its research funds. "I don't see how [defense officials] can do their jobs without that data," said Costello, now a re-

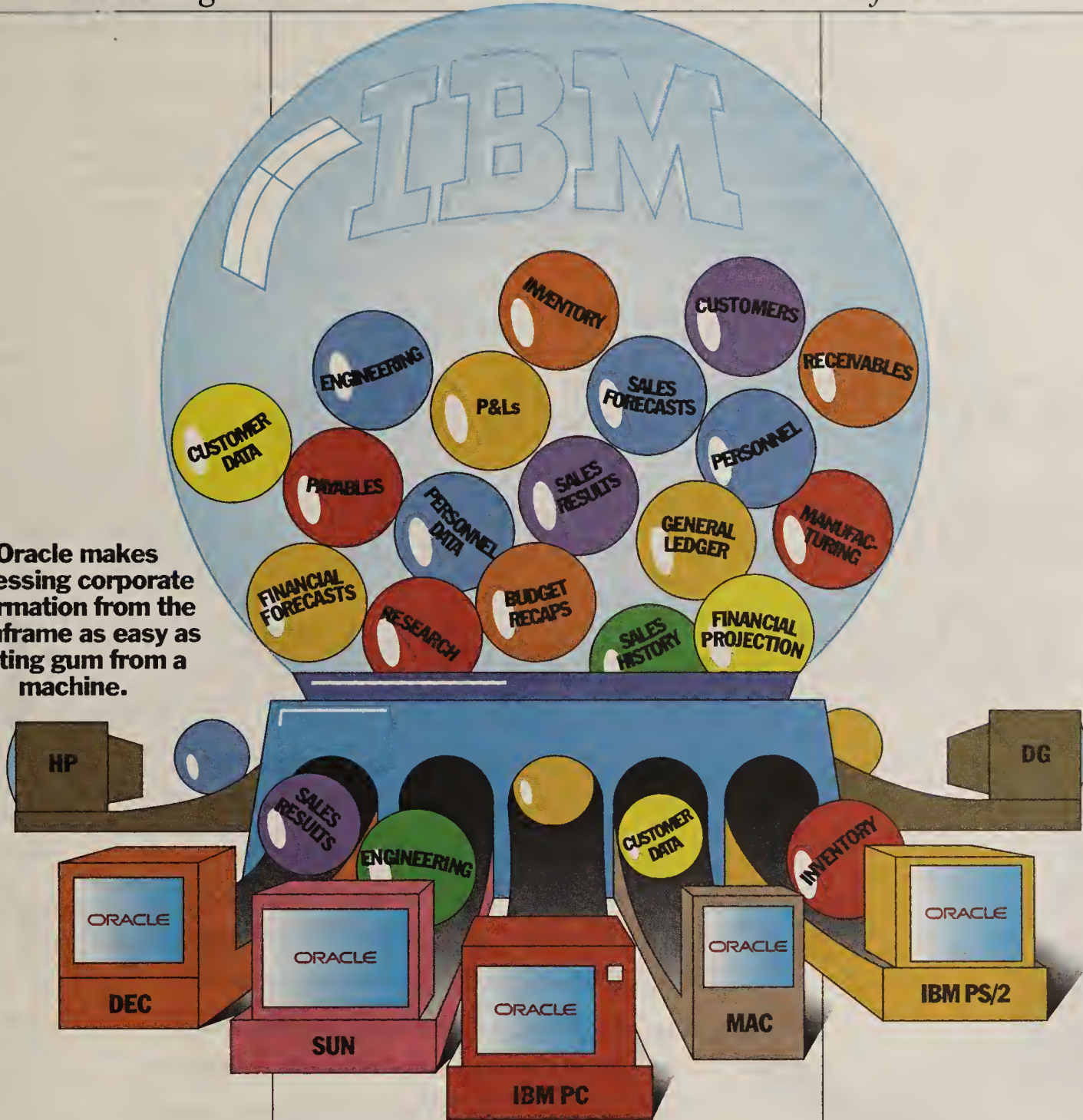
rest of the industrial base are totally wrong: They are intertwined," he said.

Pushing Project Socrates into the private sector may actually make the program more effective, because the private sector is better at disseminating information to U.S. companies, according to Tom Satoh, president of Scan C2C, Inc., a Washington, D.C.-based firm with a database of translated Japanese technical literature.

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IBM sets Callpath to reach out

BY ELLIS BOOKER
CW STAFF

WHITE PLAINS, N.Y. — IBM vastly expanded the scope of its 1-year-old system for linking IBM mainframes to private branch exchanges (PBX) last

week by delivering an entire architecture for integrating its own computer platforms with a variety of telecommunications switches.

The first implementation of the Callpath Services Architecture will be on the Application

System/400. IBM listed some 19 applications developers that are writing interfaces or applications for Callpath/400, which will be commercially available next March.

IBM's objective, according to Berge Ayvazian, vice-president

of communications research at The Yankee Group in Boston, "is to position Callpath as a universal interface between IBM computing platforms and voice switches."

Digital Equipment Corp. has a PBX-to-processor offering called Computer Integrated Telephony, or CIT, for its VAX line, and AT&T recently published an open interface for communica-

tions between computers and telephone switching systems that is called the AT&T Adjunct/Switch Application Interface (ASAI).

IBM said last week that it is engaged in technical negotiations with AT&T to link ASAI with its Callpath Services Architecture and that the two are also at work bringing AT&T's System 85, Definity Generic 1 and Definity Generic 2 to the list of supported switches.

IBM's Callpath Host, introduced last May, integrated IBM System/370 CICS/MVS applications and the IBM Rolm Systems 9750 PBX and managed only in outbound, telemarketing-type applications.

One user of the earlier system, and a scheduled beta-test site for the AS/400 implementation, is Smithkline Beecham Corp.

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IBM LISTED some 19 applications developers that are writing interfaces or applications for Callpath/400, which will be commercially available next March.

"The application we have now gives us the function to automatically dial a number and have that number matched to a customer screen," said Pam Brown, a telemarketing supervisor at the company's Bristol, Tenn., facility. Brown said that the host application has increased the speed of her 18 operators by 16%.

With the inbound call support of Callpath/400, which Smithkline Beecham will begin testing in September, Brown envisions that the customer data, keyed to the incoming telephone number, will be presented to the operators before they pick up the phone.

Concerning support for Centrex services, an IBM official said the Callpath Services Architecture will be compatible with Centrex and central office services, although he would not predict when this function might be added.

Supported PBXs for Callpath/400 include the IBM Com300, the Rolm 9750 Business Communication System and the Siemens AG Hicom 300, as well as the Northern Telecom, Inc. Meridian 1 and Meridian SL-1.

IBM said it would bring the approach to its System/370 CICS/MVS applications and the Personal System/2 under OS/2 Extended Edition.

Callpath/400 will range in price from \$3,900 to \$27,000, IBM said.

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Users uneasy over OSF's vote to snub Sun, favor Transarc

BY JOANIE M. WEXLER
CW STAFF

BOSTON — Whether the Open Software Foundation will hasten or hinder progress toward interoperability was the main question remaining after its selection last week of core technologies for its Distributed Computing Environment (DCE).

Potentially most disruptive to the user community, for example, was the OSF's unsurprising decision to snub Sun Micro-

systems, Inc.'s Network File System (NFS) in favor of Transarc Corp.'s AFS, originally called the Andrew File System.

NFS has become a de facto standard allowing transparent access to files anywhere on a network. NFS — which is installed in more than one million nodes, according to Sun — is not inherently compatible with AFS, said Eric Schmidt, vice-president of Sun's general systems group. This could cause duplication of investment by NFS users forced to use both file

systems, he said.

Some vendors resell the widely licensed NFS, while others bundle it into operating system prices.

AFS was chosen because "we had a wish list for our file system and discovered that Transarc had already fulfilled it," said Doug Hartman, the OSF's director of requests for technology and validation engineering.

According to Transarc, different protocols are at the heart of the two file systems, but they can co-exist through the use of an AFS/NFS translator included in the DCE package.

AFS tracks files between multitasking



OSF President
David Tory

computers. The OSF did say that it would offer the server portion of Sun's PC-NFS, but client PC-NFS — the only existing file system for single-tasking machines — must be procured through other channels. Users will reportedly be able to license a package of OSF-sanctioned operating system-independent technologies for distributed client/server computing from inde-

pendent vendors by mid-1991. Pricing will be based "on market conditions," OSF President David Tory said.

NFS is part of Sun's Open Network Computing platform, which the OSF also passed over in favor of the Hewlett-Packard Co. Apollo division's Network Computing System (NCS). NCS includes HP's version of remote procedure calls (RPC), which permits an application to use computing resources remotely on a network.

Both the NCS/RPC technology and Transarc's AFS were selected from the Decorum proposal — a suite of technologies offered by a vendor group that also includes IBM and Locus Computing Corp.

While the OSF insists that all its technology selections announced last week were made strictly on technical merits, those chosen — with the exception of Microsoft Corp.'s LAN Manager — were all proposed by OSF members. "But those members are the most technically competent vendors around," claimed Walter Ulrich, an analyst at Arthur D. Little, Inc. in Cambridge, Mass., who served on an OSF consultant committee during the DCE selection process.

Selected software

Other software technologies selected include the following:

- DECdns naming service, Concert Multithread Architecture and DECdts time service from Digital Equipment Corp.
- DIR-X X.500 directory service from Siemens AG.
- Kerberos security service from the MIT Athena Project.
- Diskless operation from HP and Transarc.
- LAN Manager/X PC integration technology from Microsoft.

The OSF "bought the best technology available," said Tom Willmott, vice-president at Aberdeen Group, Inc., a Boston consultancy. "But the selections are oriented more to server-to-server networking than the client/server environment." Willmott noted, however, that users will have integrated technologies from the major players "a year or two earlier" than they would have without the cooperative vendor effort.

Others said the Decorum selections could delay product introductions as vendors either evaluate which standard to support or invest in both standards. "There's no reason, with over a million [ONC] nodes installed, to go out and try to force a new standard with a much smaller installed base," said Michael Prince, MIS manager at Burlington Coat Factory Warehouse Corp., an NFS user. "This decision will limit choices for people like me."

Tom Kirchner, senior research scientist at the Natural Resources Ecology Laboratory at Colorado State University, added: "An OSF endorsement doesn't necessarily mean that these are the technologies I should select. I'm concerned that the OSF could fold."

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Panel builds case for federal privacy board

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — A congressional panel began building momentum last week for creation of a federal privacy board to advise the private sector on fair information practices and represent the U.S. on transborder data flow issues.

At a hearing chaired by U.S. Rep. Robert E. Wise Jr. (D-W. Va.), several witnesses expressed their growing concern about businesses that compile elaborate databases on consumers for targeted marketing campaigns, also known as database marketing [CW, March 5].

"Detailed personal information — age, gender, marital status, income — is being bought and sold with little regard to the long-term implications for personal privacy or the concerns of the American people," testified Marc Rotenberg, spokesman for Computer Professionals for Social Responsibility.

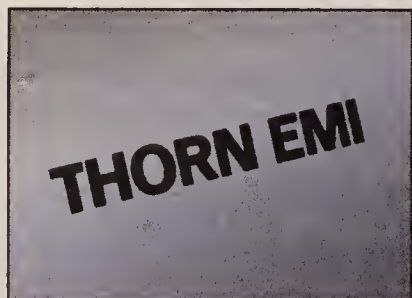
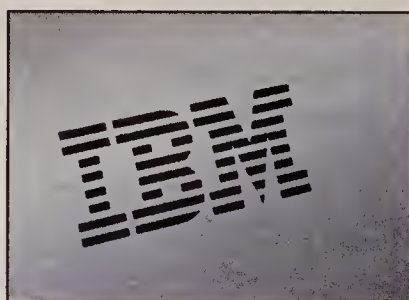
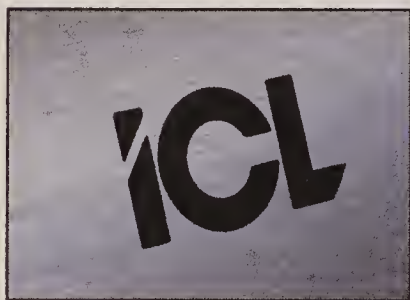
He said that the database marketing programs often violate one of the nation's most basic privacy principles, which is that information provided by consumers for one purpose should not be used for another purpose without the consumer's consent.

Rotenberg and other privacy advocates supported the creation of a U.S. data protection board to act as a watchdog on privacy issues for both the public and private sectors.

Wise, chairman of the House Subcommittee on Government Information, Justice and Agriculture, has introduced a bill that would create such an advisory board. "We have agencies that are concerned about public health, consumer protection, civil rights, mine safety, battle monuments and marine mammals. But no agency is devoted to privacy," Wise said.



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The legislator expressed concern about "frequent-buyer" programs that track consumer transactions, such as the purchase of books, travel services, groceries and mail-order merchandise.

Jerry Saltzgaber, chief executive officer of Citicorp POS Information Services, Inc. in Stamford, Conn., described his firm's pioneering effort to capture data on consumer purchases at 800 supermarkets. The data is used to target coupons or to create a list of people who, for instance, buy steaks and might be good targets for a firm selling barbecue sauce.

A spokesman for the Direct Marketing Association defended targeted marketing as a way to help reduce "mailbox glut," adding that the association has a procedure for removing names from mailing lists upon request. Several witnesses warned that weak privacy safeguards in the U.S. could actually harm U.S.-based multinational companies. The reason is that some of Europe's strict privacy laws prevent the transfer of personal data — such as employee data — to countries with weaker privacy laws.

A U.S. privacy board could represent U.S. interests on the transborder data flow issue, said Eli M. Noam, a member of the New York State Public Service Commission. Domestically, he said, the board could help the country "steer a course between antitechnology Luddism on the one hand and a technocratic disregard for privacy interests on the other."

Unisys opens up OLTP products

BY ELLIS BOOKER
CW STAFF

NEW YORK — Hoping to spur the development of on-line transaction processing (OLTP) applications, Unisys Corp. last week introduced an open standards-based family of OLTP development products for its U series computer platforms.

The development tools, labeled Open/OLTP, will run on AT&T Unix System V, Release 3.2 and are based on the XA interface, a proposed distributed transaction processing standard from the X/Open Consortium Ltd. that specifies the interface between an OLTP transaction manager and a database management system.

"Eventually, our Open/OLTP strategy will encompass our entire line of Unix and mainframe systems," said Cyril J. Yansouni, president of Unisys' Computer Systems Product Group.

Along with the software announcement, Unisys said it formed a Software Partnership Program to release an initial version of these tools to its customers and independent software vendors.

Informix Software, Inc. in Menlo Park, Calif., said it planned an XA-compliant version of its own SQL database engine in early 1991 that would work with the Unisys Open/OLTP platform. Oracle Systems Corp. also threw its support behind the partnership program.

Unisys also unveiled a suite of commercial Unix packages last week that it said will interoperate with one another.

The Value Added Platform, Release 1.0, contains more than 50 software packages from 30 vendors that range from graphical operating environments to program development tools and DBMSs.



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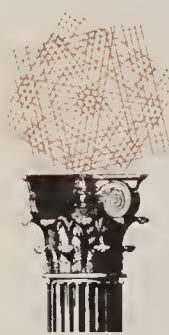
WANG

Taking surgery to a new dimension

Mayo Clinic/Foundation professor creates program that will allow doctors to practice operations

Editor's note: The second annual Computerworld Smithsonian Awards, recognizing individuals and organizations that have achieved outstanding progress for society through the use of information technology, will be awarded in a ceremony to be held June 25 in Washington, D.C. During the next four weeks, Computerworld will profile one nominee from each category of awards and list the other nominees. This week's profile is from the Medicine and Health Care category.

BY MAURA J. HARRINGTON
CW STAFF



ROCHESTER, Minn. — When a brain surgeon performs an operation, accuracy is of the utmost importance.

In the past, most surgeons' knowledge of medicine was derived from images discovered through others' experiences, mistakes or findings during operations.

To enhance doctors' knowledge of medicine through images and increase the accuracy of surgery, Dr. Richard Robb, a professor of biophysics and director of Biotechnology Computer Resources at

the Mayo Clinic/Foundation, wrote a program that allows doctors to perform practice surgery on a computer workstation using a patient's X-ray images before going into real surgery.

To do this, the patient's three-dimensional image models, such as those taken from magnetic resonance imaging, X-ray-computed tomography and ultrasound tomography, are transferred into the workstation. After it has been input, the doctor can perform several different tests and practice surgical approaches using over 65 applications available in Robb's three- and four-dimensional program, called Analyze.

The advantage of Analyze, according to Robb, is that a doctor can learn from mistakes made on the workstation, with no harm done to the patient. "What underlies this whole system is that the imaging measurement accuracy is as small as 1mm. Also, doctors can make the computer screen as accurate and as real as the actual patient's case," Robb said.

Accuracy is the key feature of Analyze, making it possible to measure even brain structures and functions in order to make assessments on Alzheimer's disease, for example, Robb said.

Craniofacial surgeons at the Mayo Clinic have already performed over 150 operations after "practicing" on Analyze,

real-time 3-D imaging of moving organisms. When he was finished, "There was no decent 3-D software that would run on [DSR], so I started to develop Analyze," he said.

Over 80 scientists, physicians and researchers worldwide are currently using Analyze for their medical research and practice surgery, Robb said. Also, four private vendors have licensed the product, including Hitachi Ltd., Cemax, Inc. in Santa Clara, Calif., Indec Systems in Sunnyvale, Calif., and Siemens/CTI Medical Systems, a subsidiary of Munich-based Siemens AG, Robb said.

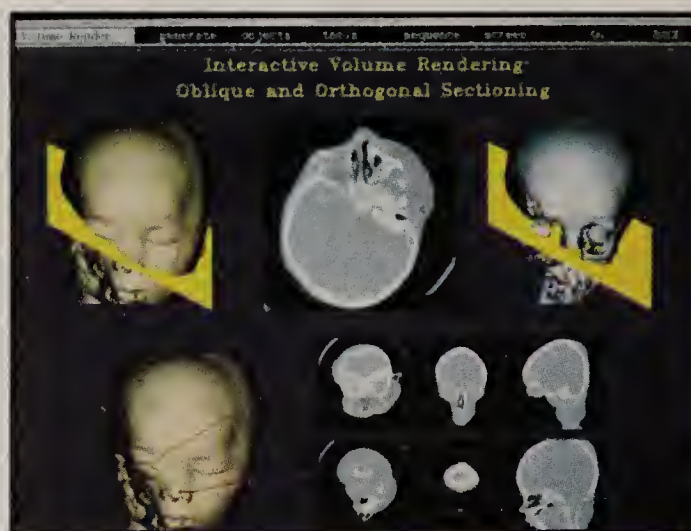
Another application being developed for the Analyze program at the Mayo Clinic and other locations is the use of computer-assisted resectioning of 3-D brain tumors and tissues for research on the foci of seizure activity in epilepsy, Robb said.

The 3-D images are created from many slices of images running simultaneously. Repeating the acquisition of these slices adds the time element. "Time is the fourth dimension," Robb said, referring to the 4-D imaging technology in Analyze.

Analyze was designed to run on a workstation but



3-D display and manipulation of brain using Analyze and MRI scan data



Example of Analyze planar sectioning tool

and none have found anything in the actual operation that they did not see when using Analyze, Robb said.

Robb began developing Analyze in 1975. He and his five-person development team finished the first version in 1980 but will continue to develop the program for several more years, Robb said.

Robb first thought of developing Analyze in 1978, after inventing an image-recognition system called the Dynamic Spatial Reconstructor (DSR), which is a high-speed dynamic imaging system for

is not a proprietary program, Robb said. It does not need to run in conjunction with any other software package but can be used with other software through the use of a local-area network using a windowing system.

So far, Analyze can run on several brand-name workstations, including Sun Microsystems, Inc.'s Sparcstation, Digital Equipment Corp.'s Decstation 6000, Silicon Graphics, Inc.'s Iris workstations and Data General Corp.'s Avion workstations.

Samples of superiority

Other organizations chosen as finalists for the second annual *Computerworld Smithsonian Awards* in the Medicine and Health Care category include the following:

- The Center for Disease Control in Atlanta was chosen for its Wonder system, which is an on-line platform designed to enable all public health officials throughout the U.S. to access health data and generate maps, tables and documents relevant to disease prevention.
- Flex-Foot, Inc. in Laguna Hills, Calif., was chosen for inventing a prosthetic foot made out of graphite, designed to allow amputees to walk and run in the same wait time and movement as nonamputees.
- Interactive Health Systems in Princeton, N.J., was chosen for devel-

oping the Therapeutic Learning Program, which is designed to structure and facilitate the process of psychotherapy.

The company's personal computer-based program is designed to cut through the patient's inhibition through the use of a menu-driven, multiple-choice questionnaire that organizes the patient's answers into a comprehensive synopsis of the problems at hand, according to Roger Gould, founder and chairman of the company and developer of the Therapeutic Learning Program.

• Purdue University in West Lafayette, Ind., was chosen for developing high-powered supercomputer calculations to analyze the surface features and interaction of viruses at atomic resolution.

MAURAJ. HARRINGTON

WHY THE 1990 CENSUS IS COUNTING ON VIKING DATA ENTRY

When the U.S. Census is taken in 1990, data will be key-entered with Viking software. About 106 million households will be asked as many as 60 questions per person. Viking Data Entry (VDE) system will be used to record responses.

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Data storage: Grace under pressure

Compression may be the means to the end of full-motion video and graphics transfer

BY MICHAEL ALEXANDER
CW STAFF

If personal computers could easily handle high-quality images, what a sight that would be — we could be looking at everything from full-motion video in multimedia applications to photographic-quality pictures produced by low-cost color laser printers.

But first, PC and other manufacturers must hit upon a better way to store, manipulate and transmit glitzy images via PCs. Now, squeezing images in and out of PCs is like forcing a golf ball through a drinking straw.

The reason is that the data requirements of good quality, color images are astronomical. Each picture element, or pixel, in an image displayed on a high-resolution computer screen can be one of 16.7 million colors, requiring 24 bit/pixel and boosting the total data requirement for a single high-quality image to about 25M bytes. Full-motion video, composed of 30 frames per second, strains even the most robust microprocessor and bogs down the largest and speediest hard disk drives now available.

Transferring images between computers can be a problem, too. It would take five hours to transmit a single 25M-byte image over a public telephone network at 9.6K bit/sec., for example. AT&T's much-trumpeted Integrated Services Digital Network (ISDN) technology will alleviate the problem, but it will still take an hour to transmit a single 25M-byte image at ISDN's standard transmission rate of 56K bit/sec.

Several companies are exploring techniques to symmetrically compress and decompress images to funnel them through these data transfer bottlenecks at faster rates than currently possible. The idea is simple: Reduce the image to its barest by stripping away unneeded data, shoot it through the data pipeline and expand it to its original form on the other end.

Rather than specifying bits for every pixel in an image, a single pixel could represent the dozens of pixels that surround it. Other compression methods could be used to trick the eye into filling in certain nuances of color without discernibly altering the image.

The process is akin to the way a stenographer is able to take dictation in shorthand and precisely restore the boss's words in a typed letter. The difference is that compression schemes are based on algorithms or formulas instead of an alphabet.

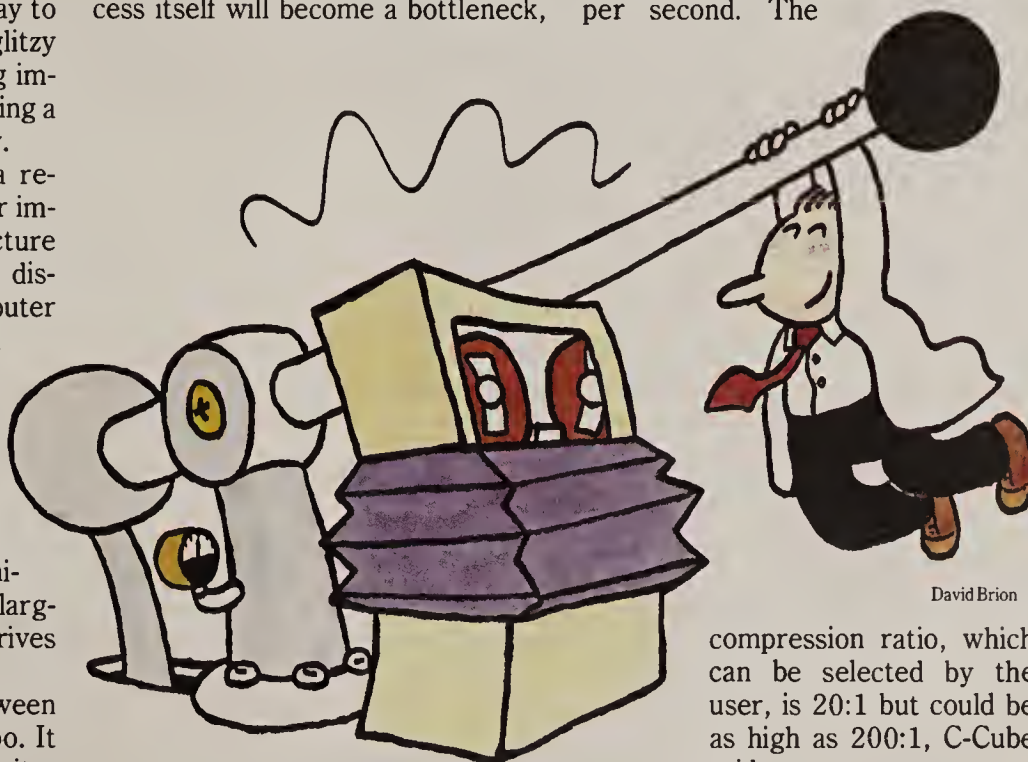
Data compression schemes currently under development for use on desktop computer systems are based

on one of four methods: software, general-purpose digital signal processors, combinations of high-speed chips and specially-designed image compression processors.

There are several hurdles that must be cleared before image compression can be put into widespread, practical use, however. The algorithms representing data must be powerful, accurate and executed at high speed or the compression process itself will become a bottleneck,

standard for motion pictures, called Moving Picture Experts Group, is also being hammered out by one of the standards groups.

C-Cube is touting a new chip based on the JPEG standard. The CL550, as the chip is designated, can compress a 25M-byte image to 1M byte in one second or a 1M-byte video frame to 4K bytes in 1/30th of a second, fast enough to process real-time video at 30 frames per second. The



David Brion

compression ratio, which can be selected by the user, is 20:1 but could be as high as 200:1, C-Cube said.

said Mauro Bonomi, manager of product marketing at C-Cube Microsystems, Inc. in San Jose, Calif.

Perhaps the more daunting obstacle is that compression-decompression algorithms must also be standardized if computers and peripherals made by different manufacturers are to communicate, Bonomi said.

A standard proposed by the Joint Photographic Experts Group (JPEG) — sponsored by two international standards groups — is getting a hard look from several manufacturers, including IBM, these days. A second

Another data compression scheme, called Digital Video Interactive (DVI), uses a proprietary compression scheme, but with its many big-company backers — which include Intel Corp., IBM and AT&T — it could become a de facto standard.

Intel and IBM market DVI add-in boards using a combination of audio/video digitizers and memory chips for IBM Personal Computer AT- and Micro Channel Architecture-compatible computers.

Benjamin Iterated Systems, a joint American and European venture

based in Norcross, Ga., hopes to win support for a compression-decompression technology based on fractal imaging. Fractals are geometrical shapes that define an object, much in the same way a brick can be made to represent a wall.

The company claims that it can achieve compression ratios of 500:1 and higher with the technology, although its only product, a software developer's kit called POEM, is capable of only a 20:1 ratio with black and white images.

POEM, short for Programmer OEM, is the only compression-decompression software product on the market using fractal technology, business planning manager J. D. Shaw said last week. Although a 20:1 compression ratio may not seem like much compared with other technologies, there is more to image quality than compression ratios, he said. "You need to compare the incoming and resulting file, or more accurately, the file size of the compressed image vs. the quality," Shaw said. The speed at which compression takes place is also an important factor. A black and white image can be decompressed in half a second on a PC with an Intel 80386 microprocessor running at 25 MHz using the company's fractal transform coding algorithms, he said.

The technology is not compatible with the proposed JPEG standards, although Benjamin Iterated Systems is looking at ways to "mesh" with those standards for some applications, Shaw added.

Data compression technology could benefit manufacturers of a wide variety of electronics products and services — not just PCs. Some firms hope to use the technology in digital cameras and videocassette recorders; others are exploring use of the technology in color copiers and color facsimile machines, for example. Consumers could one day dial into pay-per-video services, perhaps to download images on file at the Library of Congress or blockbuster movies from their local telephone company, Shaw said.

Chip puts the squeeze on information

Infochips Systems, Inc. in Santa Clara, Calif., has introduced a compression chip that radically increases the capacity of most random-access storage devices and reduces the cost of storing data, according to company officials.

The IC-105 compression chip boosts storage capacity up to three times on hard disks and 15 times on floppy disks, according to Infochips Chief Executive Officer Chet Brown.

The chip works by reading information as it is sent to the disk or other peripheral devices and searching for duplicate pieces of data. Once found, the chip records the data duplicates in a "dictionary," assigns them symbols and writes the symbols to the disk instead of the original data. When the file is read from the disk, the chip replaces the symbols with the origi-

nal data using information stored in a virtual file allocation table that is stored on the disk. Customized dictionaries can be saved for known file types, such as a database file format, to increase the throughput of the chip.

With reported transfer rates of 2M bit/sec. writing and 5M bit/sec. reading (with 10M bit/sec. burst capability), all transfers would reportedly occur transparently to the user. Users may even notice an increase in the performance of floppy disks because it takes fewer disk accesses to transfer a compressed piece of data as compared with an uncompressed file.

The company said it will introduce an eight-bit expansion board using the chip, called Expanz, at Comdex/Spring '90 in June.

CHRISTOPHER LINDQUIST

Compared to HP's NewWave Office, IBM's



OfficeVision has a few limitations.

IBM promises to simplify business computing dramatically with its new OfficeVision systems. But if you follow that vision, you may not be as prepared for the future as you think.

Hewlett-Packard has a better way.

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HP NewWave Office system integrates all your existing MS-DOS® applications. IBM OfficeVision doesn't. So, which system better protects your investment in DOS PCs and software?

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To date, sixty companies are writing software for HP NewWave Office. According to IBM's advertising, eight are writing applications for IBM OfficeVision. So, which system gives your people a greater selection of software?

Beyond all this, HP NewWave Office system gives your users the extraordinary new "agents" capability. Like a computerized staff, "agents" can learn to handle a wide range of sophisticated computing tasks, such as compiling and distributing sales forecasts. IBM OfficeVision has nothing comparable. So, which system is actually more visionary? To find out, call 1-800-752-0900, Ext. 283G.

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**HEWLETT
PACKARD**

EDITORIAL

Spring cleaning

THERE MAY NOT be another group in the history of business that has given itself more black eyes than the computer leasing community.

This propensity for self-inflicted pugilism scored a big knockdown this month when, at a lessor's confab, Jim Hassett alleged that the leasing industry is fraught with immoral abuses, fraud and the kinds of dirty tricks that would have made Donald Segretti (of Watergate fame) blush. And, Hassett added, said abuses are not confined to only a few firms.

Hassett is not some prosecutor hack from the local district attorney's office. He's a hands-on leasing practitioner who has been appointed by the federal courts as a trustee to oversee the reorganization of several troubled leasing firms. Most notably, Hassett oversaw the reorganization of O.P.M., the company whose two unscrupulous owners gave new meaning to the word "fraud" and were given stiff jail terms for their efforts. He's now overseeing the Chapter 11 reorganization of Continental Information Systems, once the second-largest lessor in the U.S.

The immediate concern within the leasing community, which includes many reputable and venerable firms, is that Hassett tarred and feathered the entire lot. His remarks made it clear he knows of specific firms and specific abuses. He even alluded to an ongoing investigation by the U.S. Attorney's office.

However, he also declined to name names. Whether he meant to or not, Hassett has created a situation where, once all the lessors make it clear it wasn't them that Hassett was talking about, some surreptitious finger-pointing is inevitable. Maybe that is what he wants — for the industry to clean its own house.

For leasing customers and for the leasing industry as well, that action is absolutely essential. A healthy, forthright leasing community is the only defense against an even heavier concentration of leasing activity within the hands of IBM Credit Corp. By some estimates, IBM's leasing arm now underwrites half the equipment under lease. That's pretty amazing when you consider that IBM Credit Corp. was virtually nonexistent less than a decade ago.

This is not to suggest that IBM has done anything wrong in gaining this market position, although its advantages in leasing predominantly its own equipment are obvious. Rather, excess concentration in any market distorts the benefits of competition in the long run.

Customers today have grown appropriately wary of the health and viability of their vendors, including their lease providers. The lessors somehow must move beyond the defensive position in which Hassett's remarks have thrust them and address the poignant issues they have raised. There are only so many hits to the head a fighter can take before everyone from the referee to the crowd calls for an end to the bout.



LETTERS TO THE EDITOR

CASE not closed

As a manager of large-scale systems integration projects and an experienced CASE tool user, I was surprised at the findings in your Product Spotlight section on front-end CASE tools, particularly as they related to Index Technology's Excelerator CASE product [CW, April 9].

At BDM International Corp., we are halfway through a 10-year, \$220 million project developing a spare parts tracking system for the U.S. Air Force. When finished, the system will total 4.2 million lines of code, of which more than 1.7 million have been delivered and accepted by the Air Force. All of our efforts over the past five years, from the requirements analysis process to system design and documentation, have been based on Excelerator. We are extremely happy with the product.

While the overall structure of your survey was quite good, I must say that you left out several key points. When a vice-president in charge of IS is selecting a CASE tool, the four key questions he should ask the vendor are the following:

- What is your track record of successfully completed CASE installations?
- Looking at those successful installations, how large and how complex were the development projects?
- How adaptable is the CASE product to changing circumstances and evolving methodologies?
- What is the price/performance of the product?

It is interesting that the most important rating category according to the respondents — "ability to move from design to development" — implies an abil-

ity of the front-end CASE tool to feed a code generator. I would have expected the highest ratings to go to Excelerator, because Index has had interfaces available for quite a while to feed both APS and TELON.

I strongly urge you to reconduct your survey in the near future, with the four questions I have raised built into the revised study design.

Mark C. Filteau
Senior Vice-President
BDM International Corp.
Dayton, Ohio

People power

Your recent editorial, CASE concerns [CW, April 9], touches on an issue that we often tend to overlook: No conversion, no matter how large or small, will succeed unless we consider the human factors involved.

Those of us used to dealing with technical issues often get caught up in the search for the "newest," "biggest" and "best" solution to a particular problem that we are trying to solve and forget that it is far easier to change the hardware and/or software than it is to change the way that people use the resulting new system.

No matter how "wonderful" or "elegant" the new system may be, no matter how much time or money it is going to save the company, unless we find some way to ensure that the ultimate users of the new system have a stake in actually using it as it was designed, no conversion will be successful. The human factor will override the technical issues, and the new system or equipment will not be fully utilized.

In today's environment, the people issues end up being much

more complex and much more expensive than the technical issues. We ignore them, or more likely forget them, at our own risk.

Mark K. Webster
Vice-President
Data Processing
Women's Federal
Savings Bank
Cleveland

Pandora's RBOCs

If Congressman Slattery seriously wants the U.S. consumer and entrepreneur to "experience the full benefits of the information age" [CW, April 16], he should think twice before giving the regional Bell operating companies free reign.

Since the 1984 divestiture, alternatives have become available in the long-distance market, but the RBOCs still maintain monopoly control over local telephone service. What has changed to make line-of-business restrictions unnecessary?

In countries like Japan, Taiwan and Switzerland, entrepreneurs have turned to us to license information service technology, not to PTT-conceived failures like Prestel and Minitel. Who says the U.S. is missing out on the information age?

Alexander B. Trevor
Executive Vice-President
Compuserve
Columbus, Ohio

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.

Mergers are in the air again

AMY D. WOHL



Spring is blooming all over, and with all that romance in the air, computer companies can feel lonely. Today, the cure for loneliness in the business world is to seek out a "strategic partner." That is, get married.

The biggest event of the season so far is, of course, the recent Lotus/Novell betrothal. Setting aside the issue of whether the merger will go through, the big question is, how will this merger change the market? Let's look at three key areas:

- **Products.** In this case, there are no products to rationalize or eliminate: Lotus sells applications, especially spreadsheets; Novell sells local-area network operating systems and has long since left the development and sale of applications software to third-party developers. Thus, there is little product overlap to worry about here.

- **Geographic consolidation.** Lotus and Novell have vastly different cultures and operate out of different parts of the country. They apparently have no current

Wohl is president of Wohl Associates in Bala Cynwyd, Pa., and editor of "The Wohl Report on End-User Computing" newsletter.

plans to change respective addresses in Cambridge, Mass., and Provo, Utah.

- **Other mergers.** If the Novell/Lotus deal goes through, it will convince other LAN vendors that now is a good time to make their own strategic alliances. Such mergers would completely reshape the LAN market.

Lotus and Novell are the latest big names to tread a well-worn path. Mergers and acquisitions have been a way of doing business in the computer industry for years. Their proposed union provides a good chance to reflect on how things have gone and where they might profitably go.

In some ways, hitching up has been a last resort. It's how firms get rid of businesses they really don't understand — or ones that they can't seem to make profitable. It is how companies try to attain the ever-elusive "critical mass." Unfortunately, revenue is not necessarily transferable. In short, hitching does not necessarily equal success.

Even so, the urge to merge remains strong. One reason is that mergers are so dramatic. Companies that plug along, quarter by unexciting quarter, growing by 10% or 15% each year, don't get big headlines.

One way to make the news is by announcing a merger. There is nothing like hot press coverage to quicken the pulses of in-

vestors and analysts.

However, not everyone qualifies for public attention. Mergers between two small firms are generally ignored unless one of them is in a hot area or the subject of a lawsuit. Mergers between two big firms are news.

Whether a merger gets a lot of attention in the press has little or nothing to do with how successful it will ultimately be, however. As in marriage, what really matters is that both sides have realistic expectations of what might happen and a good idea of how to proceed. Both sides must feel, at all times, that they are being treated fairly, or the deal will ultimately fail.

And, as in marriage, some mergers may exist only on paper. Sadly, many an acquired firm may in fact be a dead husk, its creative life dried up, as frustrated founders and key employees leave and dissatisfied customers flock to competitors.

A good example of this is Xerox's independent software publishing group and Ventura, its

very successful desktop publishing product. After a recent change in management, Xerox announced that Ventura's founders and staff would be leaving to pursue other interests.

Worse was the announcement that the departed would be replaced by "Xerox programmers." Not to malign their talents, but desktop publishing software



Rollin McGrail

is an art form and large company software development is a bureaucratic process. It's hard to match them up.

However, there is another

way — one that could be instructive and a model alternative to simple mergers and acquisitions.

The Xerox/Ventura relationship started off in a much different way. With its deep pockets, Xerox originally funded the marketing investments that would have been impossible for a small development firm such as Ventura. Ventura was free of bureaucratic control, and its employees were free to write software in a creative environment.

Similarly, IBM found a creative way to fund software creativity without fundamentally changing the developing organization. IBM's approach is to make minority equity investments in promising companies and publish their software when appropriate.

Because good software is what makes hardware sell, IBM can hardly be accused of altruism — just good business sense and a willingness to take a long-term attitude.

We need a lot more long-term thinking and creative funding techniques as an alternative to simple mergers and acquisitions. We need a realization that large, bureaucratic organizations are not the right environments for designing and enhancing microcomputer software packages. And we need to alter the idea that investors have an inalienable right to expect instant returns on their investments.

Before more computer companies vow themselves into binding unions, they'd do well to consider all the options.

IBM joins the crowd, opens SAA to Unix innovations

IBM WATCH

PETER BURRIS



After spending recent years promoting Systems Application Architecture (SAA) as the primary development path for all its product lines, IBM has shifted gears and jumped aboard the open systems bandwagon.

With the introduction of the RISC System/6000 and recent AIX developments, IBM is positioning its version of Unix as a major player in the open systems marketplace. By providing interoperability between SAA and AIX, it has taken tangible steps to open up its proprietary architecture to the outside world.

While the new strategy makes sense from an economic point of view — IBM is simply hedging its bets by diversifying

Burris is director of International Data Corp.'s IBM Advisory service.

beyond SAA — the move strongly counters IBM's traditional posture of closed systems. What profound forces are bringing about this shift in policy?

First, IBM's commitment to developing a common architecture for its product lines limits the resources it can devote to other areas. Big Blue's technical brain trust is bulldozing through the problems posed by implementing SAA. While engaged in this effort, IBM risks falling behind the pace of innovation in other areas.

Many of those advances are likely to occur in the open systems world and be built on a Unix platform. In industry, government and academia, many of computer science's best minds are using Unix to attack technical challenges.

Because these challenges are initially studied and understood in the Unix realm, it's safe to assume that is where they will first be made commercially available. Only later will they be transferred into proprietary systems environments.

This is the major force that has caused even cautious IBM to open its architecture to outsiders. IBM's Unix strategy is to develop AIX to strongly comply with widely installed standards, thereby streamlining any porting process for new outside developments. Once moved, the new software can be more easily studied, understood and, if appropriate, assimilated into SAA.

Secondly, the company is building an informal Unix organization headed by an executive who also oversees the fulfillment of SAA specifications. This group is responsible for "match-making," i.e., alerting the larger development groups of Unix developments and introducing the proprietary folks to open systems technologies. IBM's goal is to at once collect its share of Unix business and use it as a conduit for innovation to prevent SAA from being obsolete once it is finally delivered.

High hurdles

Leaping the technical, political and competitive hurdles between the stark reality and grand promise of SAA may be IBM's greatest feat. In addition, incorporating emerging advances in software will require IBM to perform amazing pirouettes

and gyrations.

The price Armonk has to pay — opening SAA and AIX to the outside world — may well be worthwhile if its goals can be achieved.

In exchange for the ability to quickly incorporate Unix innovations into its products, IBM is providing bridges between key SAA systems and AIX. For example, the company recently announced AIX connections to Netview and electronic mail functions. In addition, Unix functions will be offered as "options" in SAA products.

The bottom line is that IBM has promised common functions and interoperability between SAA and AIX. Henceforth, no announcement will be made in either area without referencing the other platform.

All this is not to be construed as "IBM is about to make SAA look and feel like Unix." On the contrary, the look and feel of SAA remains primarily a function of what is installed in combination with IBM's development priorities. Nor is it to be understood as "SAA, thanks to Unix, is in the bag." That's a function of what resources IBM can muster and the degree to which any organization can deliver something as complex as SAA.

In fact, IBM's recent moves in the Unix arena are similar to those in other software areas. To stay atop the industry, IBM needs help — and knows it. Big Blue has encouraged numerous sources to step forward and assist. Some have seemingly come from nowhere. Witness the company's strategic alliances with various computer-aided software engineering and applications vendors. In aggregate, IBM and its strategic development partners will labor to pull forward into the 1990s an integrated set of both aging and new programs underpinning SAA.

Information systems organizations will benefit from this policy change. Their decision to invest in technologies such as SAA requires that they not only appraise current costs, benefits and impacts but also evaluate future requirements.

IBM's recent moves have helped alleviate one of the strong objections to SAA — the danger of signing onto an architecture that is restricted to old technology to the exclusion of new developments in other areas. AIX will be the conduit to funnel outside developments into SAA and at the same time give non-SAA vendors and users access to IBM's strategic architecture.

Place blame where it belongs

READER'S PLATFORM

WILLIAM H. BLAIR

I would like to offer an opposing viewpoint to Tim Stone's "Anti-assembler prejudice hinders better computing," which con-

cerned the merits of assembler vs. Cobol [CW, April 23].

There is an unwarranted bias against the use of assembler throughout most of the commercial data processing industry. Many experienced professional programmers today feel that the

failure of most organizations to take advantage of assembler language when developing ordinary business data processing applications (not to mention systems software) represents an untapped potential.

Rather than cite an extensive

laundry list of examples (efforts to convert Cobol bigots, or bigots of any nature, are typically fruitless), I would like to discuss the real problem: professional programmer incompetence.

The system whose performance, functionality and flexibility was very poor (supposedly because it was written in Cobol instead of assembler) would have been an equal or greater disaster

had it been written in assembler — not because the team had no assembler expertise, but because they were probably very poor programmers to begin with.

In contrast, none of the many well-written, robust, production-quality systems — in Cobol — were written by "regular" programmers. They were written by professionals, who knew the right tool when they saw it and used it with great personal pride and craftsmanship.

Poor excuses

There is absolutely no reason in the world for any production application written in Cobol to have poor performance, function or flexibility. When this happens, it is not because of any limitations of the Cobol language itself or because of any particular implementation.

The failure can usually be attributed to unprofessional practices or poor use of the tools chosen. Most frequently, the basic cause of these problems is poor data representation or inappropriate or inefficient algorithms. Programmers who commit such sins (unfortunately all too regularly) do so without regard for the name, style or level of the programming language they are using. They are equally incompetent (if not dangerous) in assembler as they are in Cobol.

While I feel that Cobol (with all due respect to Grace Hopper and her nanoseconds) should never have seen the light of day and wish that it could be banished from the universe, I do not blame Cobol (or any other language, for that matter) for the sorry state of the inventory of data processing applications.

If we had better educated, more competent programmers writing these applications in the first place, the proverbial applications backlog would not exist in its present form.

Yes, there are regular programmers, and there are, in fact, extremely productive, supremely competent demigods (at one time we called them "superprogrammers"). But not all assembler proponents are demigods, and not all Cobol programmers are regular. All programmers are not created equal — some are much better than others.

Things are good for what they're good for. Sometimes assembler is best, but usually a high-level language is better.

Every programmer should strive to be an expert in his chosen domain and seek to constantly broaden his experience. While there is sometimes a substitute for expertise, given the user group meetings, books, journals, publications and training programs available today, there is no excuse for incompetence.

Blair, a competent assembler hacker, is a co-founder and vice-president of Tangram Systems Corp. in Cary, N.C.

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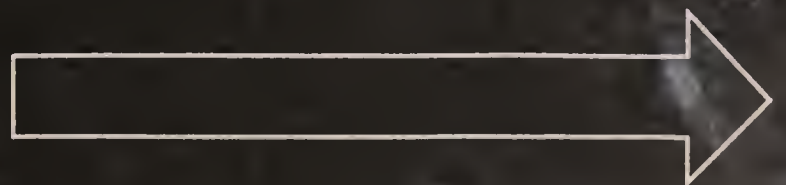
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SOFT TALK

Rosemary Hamilton

Officevision alive, not well



When *Computerworld* checked in on Officevision at the one-year mark, we felt a pulse, but it

wasn't beating very hard.

But that doesn't mean the patient is checking out. If Officevision has anything going for it, it's potential. Officevision is, after all, one of IBM's long-term strategic products. What we see today is only a fraction of what could be here several years from now.

More to the point, however, Officevision really seems like it could be a worthwhile product for users. We just have to see how willing IBM is to breathe more life into it in the near term. If IBM addresses some prickly issues, such as better DOS support and the support of non-IBM platforms, then we could see widespread use of this office platform.

The idea of having one office centerpiece for users to work in is a good one. It would give users a consistent interface to both their office tools, such as electronic mail and calendaring, and their applications. Plus, they could combine the functions of these tools and applications

Continued on page 38

Oracle creeps in MVS world

Users seem happy with IBM mainframe version, but sales are slow

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

REDWOOD CITY, Calif. — When Oracle Systems Corp. shipped its relational database management system product for mainframe-based IBM MVS in 1987, it must have seemed like an unlikely marriage. Most Oracle licenses go to those who run midrange computers or mini-computers — or to those who run personal computers.

However, Oracle engineers insulated the Oracle code, which was written on a Digital Equipment Corp. VAX computer,

from the IBM operating system and linked it to IBM system facilities such as CICS, TSO and VTAM. To these, Oracle added SQL*Connect, which bridges Oracle to IBM's DB2 relational database — and SQL*Net, which connects one Oracle DBMS to another, even if the two Oracle DBMSs run on different hardware platforms.

For all the potential incompatibilities between Oracle and IBM's mainframe system software, this DBMS marriage appears to have worked, according to some of the few users who have licensed it. "I support Oracle on both platforms — the VAX and the IBM mainframe,"

said Brian Laskey, president of the MVS Special Interest Group that is part of the International Oracle Users Group. "I don't think you have to tune or tweak the database software any more on the MVS platform than you do on the [DEC] VMS platform."

Even though users reported that the Oracle product works well on the IBM platform, relatively few sales have resulted. Currently, with a total of 100,000 Oracle licenses sold worldwide, only about 100 are for MVS.

Despite the slow sales of Oracle for MVS, company executives said they view the IBM mainframe as a "growth" plat-

form for the Oracle DBMS because those who are using Oracle for MVS have tended to be well-known companies in which Oracle can showcase its product. Users include tractor maker Deere & Co. in Moline, Ill., and aerospace giant McDonnell Douglas Corp. in St. Louis.

Because Oracle prices are based on machine size, this small group spends plenty on Oracle for MVS. Prices for the MVS version range from \$103,000 to \$281,000, not including the 15% annual maintenance fee. By contrast, VAX pricing for Oracle ranges from \$48,000 for a Microvax computer to \$216,000 for a high-end VAX 9000.

Until now, most Oracle/MVS customers have been using the relational product as a stand-alone alternative to IBM's DB2 or as a large database server for

Continued on page 38

Report finds CASE tools not being used to potential

BY ROSEMARY HAMILTON
CW STAFF

A recent report on computer-aided software engineering (CASE) usage showed the market to be still in its infancy and suggested it will not flourish until more users adopt more formal software development methods.

The survey was conducted by Case Research, Inc. and is based on responses from 270 IBM mainframe shops in late 1989. Of that group, 138 possessed one or more CASE tools.

However, among those with CASE tools, only 25% said they

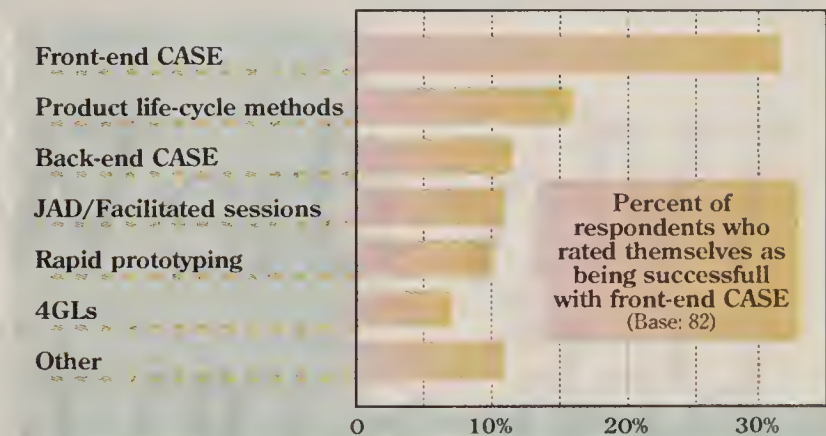
were actually using the products. Further, of the group with CASE tools, nearly 90% had acquired them within the last two years.

Of those respondents using CASE, the majority had a front-end CASE tool. Seventy-seven also had a back-end tool, while 10 respondents had back-end tools only. Front-end tools typically handle the planning, analysis and design, while back-end tools are used for physical design, construction and maintenance.

The research company reported that its first CASE sur-

Promises, promises

Front-end CASE and product life-cycle methods ranked 1 and 2 when front-end CASE users rated the chance of success for various approaches



Source: Case Research Corp.

CW Chart: John York

vey, which was released in 1988, showed that only a few users were committed to CASE and

that the use of structured methods was limited.

Continued on page 35

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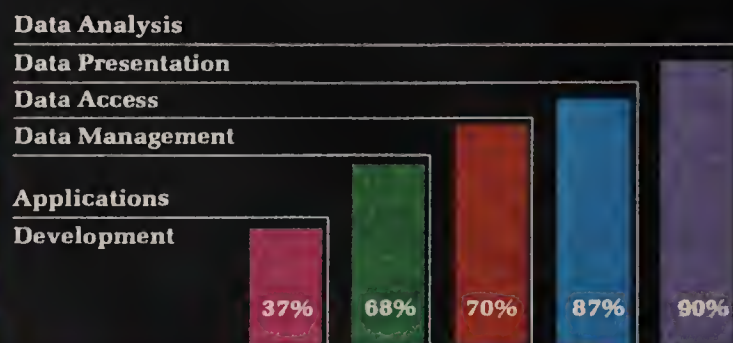


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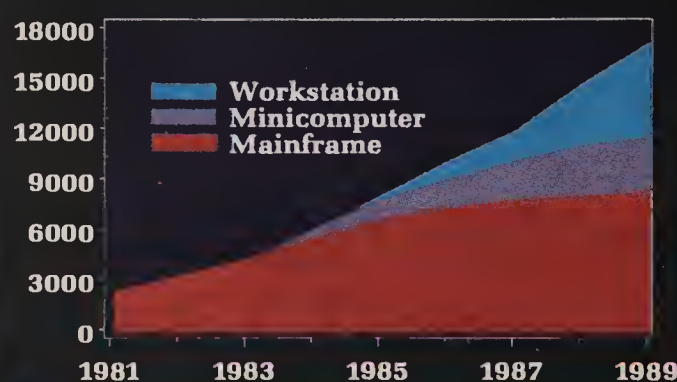
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Keeping hospitals' IS healthy

HCA calls decentralization key to successful patient database systems

ON SITE

BY SALLY CUSACK
CW STAFF

A pristine castle crowns a hill in Nashville. Smoked glass and waterfalls grace a glistening, stainless steel-trimmed interior. People tread softly and speak in hushed tones . . . OK, OK, so maybe it is *not* a castle. But the data center for Hospital Corporation of America is more than a little impressive.

HCA Information Services, Inc. provides hardware and software systems to more than 300 hospitals nationwide; the entire building, including a control room that looks like something out of *Star Trek*, is devoted to supporting information systems services for these clients.

In the business of running hospitals for 20 years, the company has maintained a decentralized computing philosophy by advocating NCR Corp. Tower minicomputers, which are connected to an IBM 3090 Model 300 mainframe running MVS/XA and housed at HCA headquarters.

"We've always believed in pushing CPU power down to the end users, and we took a lot of shots from outsiders for that view in the early days of the mini," said Terry Armstrong, assistant vice-president of client service. He said the company now feels somewhat vindicated

since decentralization has become an industry watchword.

The company has divided its clients into nine regions of responsibility, and a director of IS

said. The Tower minicomputers were competitively priced, he noted, adding that NCR's software porting capabilities were also attractive. The computer



Greg Kinney

HCA Information Services provides HCA's hospitals with complete hardware and software systems

oversees each region.

Armstrong contended that hospitals are decentralized by their very nature. "They always have been. Look at the different departments: pharmacy, laboratories, radiology, business administration. Departmental systems just made sense."

HCA looked at every major hardware vendor before choosing NCR in 1983, Armstrong

manufacturer also handles on-site services for HCA. The Towers run under Ryan-McFarland's RM-COS operating system.

"In the past, IBM just wasn't as competitive in the mini market price-wise," Armstrong said, noting that the company is "getting better."

HCA's main concern is to help hospitals provide care and easy

access to patient data, Armstrong said, and with the increasing number of medical procedures being done on an outpatient basis, computers are even more valuable when it comes to keeping track of patient information.

"We have developed most of our systems so the hospital can do its own installation," Armstrong said. "We are also heavy into the 'train-the-trainer' concept, where clients send managers and technical people to us so that they in turn can instruct the appropriate division at the hospital. We want them to realize that it is their system, not ours, though we provide them with services."

The IS services provider has a staff of 375 employees — more than 100 of whom are dedicated to user support and documentation. The center provides training seminars for managers and advanced education seminars for sophisticated users and developers. Every hospital IS director is involved in a training program.

"We have to provide training to make sure users understand the technology. In the past few years, we have complicated the way hospitals do business by installing computers," Armstrong said. "A hospital is staffed with medical personnel, not computer technicians, so you're asking them to learn procedures they never had to deal with before."

HCA offers hospitals a suite of departmental applications tailored to hospital needs, including business office functions, collection, financial reporting, materials management and personnel, as well as systems for nursing ad-

ministration, radiology, pharmacy and laboratory divisions. Although Armstrong was tight-lipped about details, he mentioned that HCA is currently testing and developing an executive information system, targeted for release in six months.

Armstrong listed "mainframe invisibility" as another HCA objective. The Nashville data center processes all base accounting functions for all of its clients. The accounting functions include billing, accounts payable, accounts receivable and individual patient account information. The approximately 1,400 Tower systems are linked to the IBM mainframe via 9.6K bit/sec. leased lines, and most of the work is performed in batch mode. There is also an on-line system for client inquiry information.

A total package

The center provides all necessary software systems for its clients, including medical records packages, laboratory systems, operating room schedulers and nutrition systems.

The company hosts user review groups as part of its software upgrade process. Typically consisting of between seven and 10 people from the field, they come to Nashville for three to five days to rank the upgrades, which are issued once or twice per year on the average. Clients can be billed with annual or monthly fees for services.

"Technology is a nonissue," Armstrong stated. "The only time technology is an issue is when it is not functioning. The real issues are functionality, support, service and education."

Coverstory: Because too much 'news' is bad news

BY MAURA J. HARRINGTON
CW STAFF

The advent of scanning devices and bar-code technology has helped to solve the retail marketer's data problems by providing more information about both the consumer and the competitor. Ironically, however, the problem of too much data has cropped up.

Information overload is a growing issue for marketers in such large companies as Quaker Oats Co. and Cadbury Schweppes, Inc. because the amount of scanned data on hand is too large, causing analysts to spend too much time locating the important marketing statistics that reside in databases.

The data, often a compilation of statistics put together by marketing analysts, is designed to keep marketing managers up-to-date on their products and competitors. Analysts search for the

language, which includes a data manager that can communicate and interact with most production databases written in SQL, said Mike Cassettari, vice-president of marketing.

Coverstory is designed to generate an English-language report in five to 15 minutes, extracting data from any source that is hooked up to the Express system, such as a database of up to 100G bytes containing universal price code information from various brand-name products.

Although Coverstory is a good aid for finding key market information, Rubinow said it will be some time before the product and the concept are perfected.

For example, Coverstory must be manually customized for each company's system, which can take as long as six months, and it is not yet smart enough to actually replace a marketing analyst, Rubinow said. "People . . . should not treat this as a replacement for their data analyst but as an informational aid."

Little agreed that the product needs to be more "intelligent" and acknowledged that it could still overlook certain data if it

key statistics — often called the "news" — in databases to generate weekly reports.

"It sounds trite, but there is a problem with having too much information these days," said Steven Rubinow, director of Decision Support Services at Quaker Oats.

Enter John D. C. Little, a professor at MIT's Sloan School of Management and a member of Waltham, Mass.-based Information Resources, Inc.'s board of directors.

Under the direction of Little and with the help of the brand managers and marketing industry analysts of Information Resources' four largest customers, the firm has developed an expert system-based product, called Coverstory, which allows a computer to determine and pick out the important news from databases containing scanned data.

Coverstory is written in Information Resources' Express

was not trained to "see" it.

To date, Information Resources has only developed Coverstory for the packaged foods industry, but it plans on expanding the product's scope to include other fields, such as the pharmaceutical and financial industries, said Jeffrey Stamen, president of Information Resources' Decision Support Systems Division. Little also said that other companies plan to use

mans have missed before," Rubinow added.

"Coverstory allows a user to quickly and easily find numbers in a large database and not get lost in those numbers," said Jim Nyce, vice-president of marketing information research at Stamford, Conn.-based Cadbury Schweppes, which rents Coverstory with other services it receives from Information Resources.

COVERSTORY ALLOWS a user to quickly and easily find numbers in a large database and not get lost in those numbers."

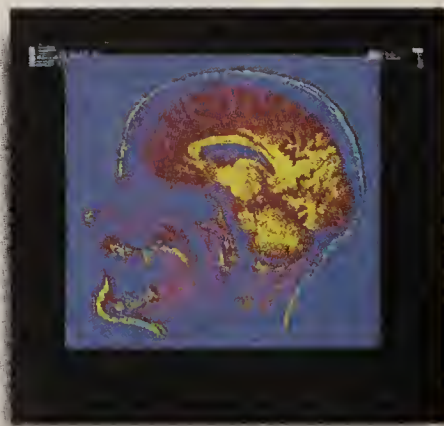
JIM NYCE
CADBURY SCHWEPES

the Coverstory concept for their own products by taking the information from a public document that he published a few years ago.

"Coverstory will save us days in research time, but the real opportunity for payback [will be when the computer finds] information [in the database] that hu-

Coverstory has been available on IBM platforms running MVS or VM/CMS since December and will be available later this year on Digital Equipment Corp.'s VAX product line running VMS, the company said. Pricing for Coverstory starts at \$75,000 for the software and initial customization.

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access to distributed databases, and imaging—for example, the Integrated Image Management system from SMS shown in this ad. And our Ethernet/FDDI solution supports all workstations that comply with DECnetTM, OSI and TCP/IP networking standards.

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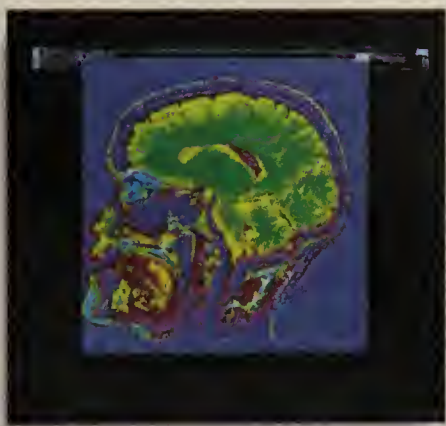
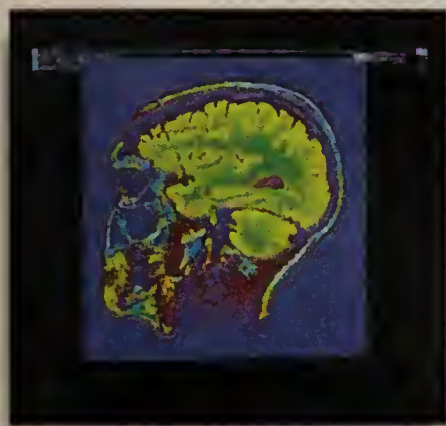
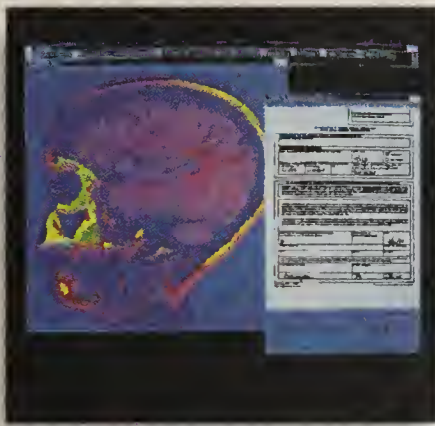
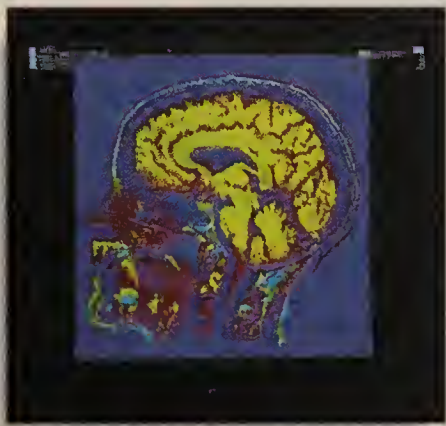
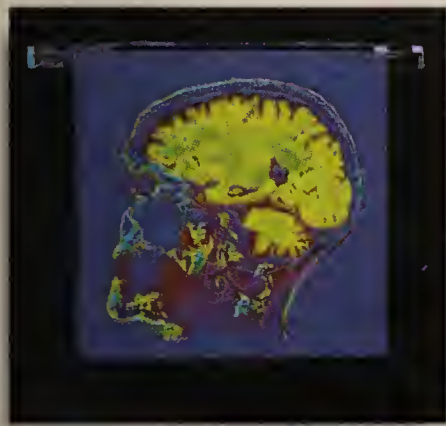
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menus and streamline your work.

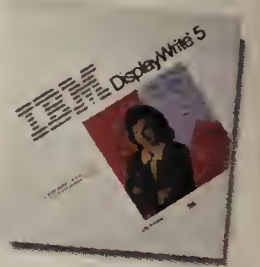
The new DisplayWrite also offers advanced merge options, multi-column formatting, support for a wide variety of fonts and more printer support than ever.

And since the new version is compatible with the entire DisplayWrite family, your company's current investment in software and training remains intact. The uncomplicated pulldown menus make it easy for experienced users to

employ new features and for new users to learn, right from the start. If anyone has a question, a toll-free support line is there to help.

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BOARDSKI MARKET APPRAISAL OBJECTIVES

1. To determine the market potential product, the BoardSkj.

- a) Can the over concept in spo

- b) Is there a particular purchase this project

- II. To evaluate the market's

- a) Will present owners of

- b) Is the proposed price of advertising...

- Advertising Strategy.

- a) In what medium are prospects reached

- b) What is a ballpoint pen?

- What is a ballpark figure for a product rollout expected to

- c) What are the results of user

- d) Should ads be geared towards p
Initiating a

- Initiating a purchase decision?

BOARDSKI REPORT # 24
 of West Coast Market by Ag

BOARDSKI REPORT # 24

"Television is the best medium for reaching our target market."
 "The largest buying potential is males between the ages of 5 and 17."
 "A related sportswear line is being suggested for consideration."

Age Range	Annual Income	Owns Surfboard	Owns Skateboard	Owns Snowboard
		27%	38%	
\$-12	00.00	37%	20%	
12-18	2,500.00	29%	15%	
19-24	20,000.00	11%	3%	
25-34	32,000.00	3%	0%	
35-49	38,000.00			

ANALYSIS:

ANALYSIS:

Due to the proximity of the ocean, the mountains, and a large number of parks, metropolitan Los Angeles represents the ideal market to introduce the BoardSki. The age group with the largest buying potential is males between the ages of 5 and 24.

Surveys indicate that television is the best medium for reaching this market, perhaps by utilizing cable stations with an all-music format. Other possible media buys include FM radio stations and college newspapers.

On a related note, a line of sportswear has been suggested, marketed mainly to the parents of the 5 to 12 age group. Once a theme for the product has been established, a clothing line could be developed around it. To date swimwear, t-shirts, sweatsuits, and winter nylon pullovers have been proposed.

PROJECT OVERVIEW

CONCEPT

Altrusport Incorporated has developed a new, all-sea-
son sporting vehicle that's sure to be a success. It's
called the BoardSki, a totally new type of sporting
equipment that offers the best of both worlds. Use it as a
favorite sidewalk. Ride it down your favorite environ-
ment. In seconds you're on wheels, and
imaginable. And you can surf
velcro boots and down your
the tastiest slope.

PROBLEM

We know the marketing plan, the needs to work and the man. Our analysts have 500 plastics and are looking for a breakthrough. Altrusport is currently seeing them.

SCHEDULING

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PRESENTATION HANDOUT #4

Relational database the toast of French bank

ON SITE

BY JEAN S. BOZMAN
CW STAFF

NEW YORK — When Credit Lyonnais, one of France's largest banks, wants to check on its U.S. accounts, it leverages a five-year investment in relational database technology to do so.

Managers in nine U.S. branch offices tap a few keys on Apple Computer, Inc. Macintoshes, and the client's accounts and credit history are displayed within seconds. The system, built on Sharebase Corp. hardware and software, has been in place since 1986. The database computer manages 1.6G bytes of data. It extracts that information from the bank's Digital Equipment Corp. Vaxcluster and then relays it to desktop workstations over an Ethernet link.

"This method of doing business is saving me lots of time and giving me a depth of information I never had before the system was installed," said Joan Conner, a bank manager who queries the relational database many times daily. "In the past, we had to scan large computer printouts to get the account and credit history. But the printouts just showed me the totals; they didn't give me any details."

By design, the number of keystrokes needed to launch a query was kept to a minimum. Users are even able to type in partial names when making ad hoc queries. "It took four people four months to develop the first phase of this system," recalled Don Wyner, vice-president of in-

formation systems technology. Future enhancements will include the use of the Macintosh mouse for queries. Currently, the VT-220 emulator used on the Macintoshes does not support that, Wyner said. Users can use the mouse when working off-line with word processing and spread-



Andy Freeberg

Credit Lyonnais' Wyner, with his company mascot, has seen improved on-line access

sheet packages, however.

Customized interfaces guide users through a menu of options to display both client portfolios and transaction histories. Some users have DEC VT-200 terminals, which offer larger monochrome screens than the Macintosh does. The Mac interface to the Sharebase machine was built with a fourth-generation language made by Smartstar Corp. in Goleta, Calif.

Sharebase is now being acquired by Teradata Corp. in Los Angeles. Credit

Lyonnais' IS managers selected Sharebase after first determining that only a relational database would solve the bank's data-retrieval requirements.

"We were strictly a batch shop in 1984, which meant that all our accounts were updated overnight," Wyner explained. The VAXs were processing payments on-line, but there was no system in place to view those transactions as they occurred. "We needed a way to place access to on-line transactions on the desk of our commercial banking officers and managers," Wyner said.

The Sharebase machine was eventually chosen and installed in 1986 because its operating system was dedicated to running the database software without the additional overhead of a general-purpose operating system. It is based on a proprietary processor and Sharebase's own limited-purpose operating system. "My own experience has been that RDBMS solutions from most software vendors have been slow performers," Wyner said. "That's true even today, although high-speed processors mask some of the inefficiencies of software RDBMS solutions."

At the time, Sharebase offered the only DEC-compatible dedicated database engine, since Teradata machines were intended to be used with IBM mainframes. Today, Credit Lyonnais has assigned 200 end users to its Server 700 Sharebase machine, which generally supports 40 to 50 concurrent users.

CASE

CONTINUED FROM PAGE 29

This time around, the survey showed a considerable upswing in both use of and plans to incorporate more formal methods.

Of the group with CASE, 81% said they use some form of structured analysis or design method. More than half of that group said they were using a formal, published methodology, as opposed to in-house procedures.

Furthermore, half of the respondents said they plan to expand their use of formal methods, and 55% said they will increase their use of formal, full life-cycle methodologies.

Backseat tools

Case Research said formal software development methodologies, which first surfaced in the 1970s, have long taken a backseat to other software tools such as fourth-generation languages and code generators, which are perceived as quicker fixes.

In addition, these tools did not go against the grain of many software developers who viewed methodologies as too rigid and too stifling of their creativity.

More recently, however, users are beginning to see successful CASE projects because of methodologies.

The Case Research survey showed that those organizations that reported good CASE results also relied on structured methods.

HDS offers IBM-compatible mainframe vector facility

BY J. A. SAVAGE
CW STAFF

Promising better compatibility with the IBM mainframe environment, Hitachi Data Systems Corp. (HDS) recently announced a new vector facility for its mainframes.

HDS has offered a math-intensive vector facility as an add-on to its mainframes for the last six years, but users had to customize applications because the processor was not IBM-compatible. Partly because of that drawback, HDS has only garnered 18 users for its vector facility.

While allowing users the ability to run supercomputerlike functions, HDS is not calling its new Integrated Vector Facility a supercomputer.

Robert Hesser, vice-president of industry marketing for the company's scientific/engineering section, said HDS expects it to be used in conjunction with scalar, or traditional, mainframe processors.

"They're not competing with Cray [Research, Inc.]; they're competing with IBM 3090s," said Mark Hess, director of Gartner Group, Inc.'s Large Computer

Market Division.

The vector facility will be a board upgrade to any of HDS' mainframes, according to Hesser. IBM, which does tout its vector offering as a supercomputer, provides a separate box connected to a 3090.

Since IBM introduced it in 1985, several third-party software developers have offered large engineering and scientific applications for the IBM vector facility.

Christopher Duckenfield, vice-provost of computer and information technology at Clemson University in Clemson, S.C., said he plans to take advantage of that available software. He has been running HDS' old vector facility for several years. "Even though we're going to have to throw away all that code, it will be worth it."

Mary Ahrens, director of numerically intensive computing at HDS, said the vector facility should support IBM MVS/ESA as well as the targeted MVS/XA, but no programs are yet available in ESA. HDS also promised a facility that will run VM but did not say when.

It is expected to cost \$200,000 per mainframe processor and be available this summer.

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IDEA

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Hamilton

CONTINUED FROM PAGE 29

— and they wouldn't have to be a techie to make this happen. Maybe one day they could do this with systems outside the IBM world.

That scenario is pretty darn good. But the problem is, it's no more than a scenario right now. Until it becomes reality, IBM is asking us to have faith. That's a tall order, but some are willing.

Some consultants interviewed recently compared Officevision with IBM's AD/Cycle in that it is another blueprint that will roll out over time. As such, it is both revolutionary and evolutionary. It is revolutionary in that it departs from the way things have always been done and requires a different way of thinking about the process, be it office automation or application development. It is evolutionary in that it will take a long, long time for IBM to make it happen.

John Tibbetts, president of Kenexis, a consulting firm in San Francisco specializing in IBM's Systems Application Architecture, recently likened Officevision to "those pegboards you've seen in hardware stores," because it's intended to be the framework that office tools, applications and other facilities can hook into.

Tibbetts said there are many similarities between the Officevision and AD/Cycle concepts. IBM is addressing major business areas with "mega-applications" that are vastly different approaches from what we now know. As a result, IBM can't possibly deliver it all at once. "In both cases," he said, "the first releases are almost toys."

Sam Albert, an independent consultant who is following IBM and its grand plans, also said he sees Officevision as a blueprint strategy. He suggested that some observers, including some users that may have dismissed Officevision, are looking at the first release too narrowly and aren't putting it in the context of the bigger picture.

IBM likes to use the word infrastructure when it talks about Officevision. Anthony Mondello, vice-president of office systems development, said he sees the day when Officevision serves as the underlying infrastructure for users and their office environment.

Taking it a step beyond, Mondello also suggested that one day a software developer creating an application in AD/Cycle could write a call to an Officevision service for a particular function instead of writing many lines of new code to accomplish that task. Then, when that program runs and it is time to print a document, the program could invoke the Officevision function instead of using its own subroutine. That would mean more programmer productivity because there would be less repetitive writing of code for functions that can simply be called from Officevision.

Now that's potential.

However, let's come back to Earth and today's business needs. Users need more from Officevision today. They need the increased DOS support, and many would like links to the Unix and possibly Apple Macintosh worlds. IBM needs to address these matters now.

Then we can think more seriously about the possibilities for the future.

Hamilton is *Computerworld's* senior editor, systems and software.

Oracle

CONTINUED FROM PAGE 29

client/server applications, in which numerous PCs or Unix servers query the mainframe for more data. Then that data is processed on the smaller machines.

"We bought Oracle [in December 1988] with the idea of networking it," said Laskey, who is an information systems manager at a Warner-Lambert Co. pharmaceuticals laboratory in Ann Arbor, Mich. "We were a very traditional IBM/IMS and [Cullinet] IDMS shop," he said. "Today, we're using Oracle in a CICS environment, and we're starting to look at distributed applications."

Oracle is also trying to leverage the in-

terest in distributed processing by positioning Oracle on the MVS as a platform to bridge heterogeneous environments.

Oracle vowed that the mainframe package may work even better in its latest release, Version 6.0, which began

ORACLE IS also trying to leverage the interest in distributed processing.

shipping last fall. "With Version 6.0, you can have true distributed queries with full network transparency," said Jerry Baker,

vice-president of both the IBM and Unix strategic business units at Oracle. He claimed that Oracle for MVS is providing today what IBM promises under its Systems Application Architecture strategy — look-alike applications on a variety of IBM platforms.

To date, few of the MVS customers have started to use Version 6.0, and those who have it in-house are still testing it to see if it matches Oracle's promises. "As Version 6.0 takes hold, people will feel that Oracle is much more viable on the IBM mainframe," said Bob Stork, manager of TDS Computing Services, Inc. in Madison, Wis., who has been benchmarking Version 6.0 this year. "We're getting 50% more throughput on some of our tests," Stork reported.

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NEW PRODUCTS — SOFTWARE

Applications packages

Unitrac Software Corp. has announced Release 5.10 of its Unitrac sales, marketing and relationship management software package.

Release 5.10 includes Unitrac Data Distributor, an optional module that allows a home office to define criteria for capturing all data entry and changes made at local and remote systems, the vendor said.

The product is available for users of IBM Personal Computers and compatibles, laptops, PC networks and Wang Lab-

oratories, Inc. VS minicomputers. Pricing ranges from \$795 to \$40,000, depending on number of users.

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Kalamazoo, Mich. 49007
616-344-0220

Manatron, Inc. has released Mirrs, an indexing, recording and retrieval software application, as part of its governmental programs.

Mirrs features on-line inquiry capabilities and includes functions such as immediate access to database information, automatic receipting, printing of indexes

and statistical reports.

Pricing ranges from \$6,000 to \$18,000, depending on number of documents stored.

Manatron
2970 S. 9th St.
Kalamazoo, Mich. 49009
616-375-5300

Utilities

Chromatics, Inc. has announced a tactical plotting software package for use with its CX2000 series of graphics workstations.

Tacview enables systems users to define databases and symbology necessary to display tactical scenarios for applications such as electronic warfare, air traffic control and antisubmarine warfare, the

vendor said.

The product is being offered with firmware, a host library and a tape cartridge for \$15,500.

Chromatics
2258 Mountain Industrial Blvd.
Tucker, Ga. 30084
404-493-7000

NEW PRODUCTS
— HARDWARE**I/O devices**

Two large-screen video/computer graphics display systems have been introduced by Gretag Image Systems.

The Esprit 1700 and 2000 feature a simplified remote convergence system and a Help menu. A dual-function remote enables up to 32 dedicated channels to be set up; these functions can be locked to recall each channel. Both systems include an RS-232 interface that provides global and individual control of multiple systems and switchers via a single remote or computer keyboard.

Esprit 1700 has a horizontal autolock scan frequency that ranges from 15 KHz to 56 KHz; the system can be upgraded to the 2000 with an autolock to 80 KHz, the vendor said. High-definition television versions of both models are also available.

The Esprit 1700 sells for \$12,995, and the 2000 costs \$17,995.

Gretag
1301 Armstrong Drive
Titusville, Fla. 32780
407-269-6680

Data storage

System Industries, Inc. has introduced a family of tape subsystems based on two new controllers for Digital Equipment Corp.'s Q-bus and Unibus.

The QS1000 controller for Q-bus systems and the US1000 for Unibus systems allow up to four CPUs to share up to four tape devices. The boards allow combinations of Q-bus and Unibus-based CPUs running VMS, Unix or Ultrix operating systems to be linked with a combination of supported tape drives, the vendor said.

Basic configurations include an SI59 8mm tape drive and an SI9625 9-track unit. SI59 subsystems cost \$7,500, and SI9625 units sell for \$21,900.

System Industries
P.O. Box 789
Milpitas, Calif. 95035
408-432-1212

A rewritable optical storage subsystem has been announced by Zetaco, Inc., a division of the Carlisle Systems Group.

Model SKR-600 is compatible with Data General Corp.'s MV series of minicomputers. It includes a desktop magneto-optical drive in its 5¼-in. form factor and a 9-in. small computer systems interface cable. Its 5¼-in. media cartridges can reportedly hold 594M bytes of data. The device can be used for system backup, data archiving and tracking multiple versions of files.

Single quantities of the SKR-600 are available 30 days after receipt of order for \$16,000.

Zetaco
6850 Shady Oak Road
Eden Prairie, Minn. 55344
612-941-9480

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The Open RDBMS

The Sybase View

Today's changing business environment demands full exploitation of multi-vendor network computing. The challenge is to integrate existing applications with new on-line systems, preserve past investments and create an open, flexible architecture for the future.

The allure of standardizing on a single RDBMS and migrating existing applications is tempting, but utopian. This "one size fits all" strategy will not preserve existing investments. And it raises the spectre of being locked into a single software vendor.

The solution: an Open RDBMS. One that provides hardware and software interoperability. One that offers a *true* open architecture and provides integration of decision support and transaction processing. One with the support of leading hardware and software manufacturers to provide heterogeneous interoperability. And one with a full range of technology integration services that can weave these heterogeneous environments into a unified computing enterprise.

OPEN ARCHITECTURE. Open architecture gives hardware and software companies — customers and competitors — access to comprehensive open interfaces. These open interfaces must be based on standards and available for extension and industry adoption. Only a network based client/server architecture, with such open interfaces, can meld an array of operating systems, networking protocols, and applications into a seamless computing enterprise.

DECISION SUPPORT. To handle real-time decision support across multiple systems, an Open RDBMS must provide interfaces that can:

- read data from any RDBMS, non-relational DBMS, or file system
- communicate with all dialects of SQL and with non-relational data manipulation languages.

TRANSACTION PROCESSING. To integrate production transaction processing applications, an Open RDBMS must provide interfaces that can:

- control inter-system transactions for concurrency, consistency and recovery
- provide access to application programs, as well as databases, to assure complete data consistency for updates
- integrate application-specific logic for custom functionality and performance
- transparently access such external data sources as real-time feeds, process control data, electronic document exchange, and mail services

MULTI-VENDOR INTEGRATION. An open system requires the full backing and support of industry leaders to ensure customers the benefits of direct interoperability. It creates a vendor-independent, open architecture that is more flexible than a single, vendor-centric approach.

TECHNOLOGY INTEGRATION. Making the open system work requires the assistance of a professional support organization with multi-vendor experience in DBMSs, operating systems, networks, and hardware.

Only SYBASE delivers on all of these requirements.

The SYBASE open client/server architecture is based on a commitment to standards. It provides enterprise-wide integration of decision support and transaction processing that marries SYBASE and non-SYBASE data, applications and services. Alliances with industry leaders like Apple, AT&T, DEC, DG, IBM, HP, Lotus, Microsoft, NeXT, Pyramid, Sequent, Stratus, Sun and over 100 independent software vendors ensure interoperability — not just portability. And Sybase's professional services division, SQL Solutions, Inc., now provides complete integration services and customer support for single or multi-vendor environments.

SYBASE. The Open RDBMS to make the open computing enterprise a reality.

THE SYBASE FORUM

This view of The Open RDBMS first appeared in
The Sybase Forum (Computerworld, March 12, 1990).

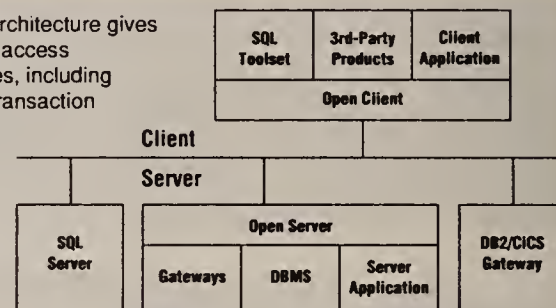
Look What You Can

SYBASE Open Client/Server Interfaces allow data and application integration and interoperability in a multi-vendor environment.

SYBASE Open Client provides an application programming interface (API) for accessing and updating data using a variety of front end tools or applications — including SYBASE applications, independent software vendor's tools, or user-written applications. **SYBASE Open Server** provides an API for accessing and updating a variety of foreign data sources and application services. Open Server can seamlessly integrate hierarchical and relational DBMSs, third party applications and real-time data feeds into SYBASE applications.

Together, Open Client and Open Server interfaces and gateways make real-time access to various data sources and application services across networks completely transparent regardless of protocol — the essence of the on-line enterprise.

The SYBASE Open Architecture gives transparent, real-time access to various data sources, including DB2 and CICS, with transaction processing capability.



"An impressive piece of work, SQL Server delivers on its claims for high-performance transaction processing. Fast, powerful, with many innovative features that are useful yet surprisingly easy to learn and use, this multiuser database server has a promising future!"

SQL Server was designed to help give continuous OLTP application availability 24 hours a day, 7 days a week.

It handles maintenance operations (backups, diagnostics, design and integrity changes) while all other applications continue to run.

It protects against loss of integrity during a system failure so that all changes to the database can be rerun quickly and accurately.

It also supports fault tolerance in media failures even when the hardware doesn't.

Sybase's professional services division, SQL Solutions, focuses exclusively on providing relational database services and tools.

SQL Solutions provides customized solutions with a complete line of SQL productivity tools that ease every step of the application development life cycle.

SQL Solutions' products support all major DBMSs across all major hardware platforms. The firm has designed, developed and integrated more relational systems in the on-line enterprise-wide network computing arena than all of the leading RDBMS vendors combined.

What Happens When Open An RDBMS.

FRONT END TOOLS

ACCELL/SQL
ACCESS/STAR
COSMOS
dBASE III
dBASE IV
DataEase SQL
EXCEL
FOCUS
JAM
JAM/DBi
NEXPERT OBJECT
1-2-3
PARADOX
Software
through
Pictures
SPSS-X
And more.

Today, more than ever, industries such as banking, manufacturing, telecommunications, and government are developing integrated applications for on-line transaction processing and decision support. They are, in short, managing the data needed to make successful business decisions.

For example, a typical on-line application for foreign currency risk managers must track fluctuations in a rapidly changing market, where over 15,000 currency price changes occur daily. Concurrently, decision support applications need to analyze on-line data to reduce potential risks.

What's needed is an on-line database system powerful enough to handle real-time decision support analysis — and that system is SYBASE.

That's why 18 out of the top 22 brokerage houses have chosen SYBASE. One firm uses

SYBASE to track market fluctuations and to analyze appropriate responses.

"With SYBASE, the system can suggest the best combination of corrective trades under current market conditions."

18 out of the top 22
brokerage firms use SYBASE.

THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
March 5, 1990, Vol. XXIV, No. 10-120 Pages \$2/Copy \$46/Year

COMPUTERWORLD

"In a preference test pitting some of the most advanced SQL-based relational database management systems against one another, SYBASE... came out on top in overall user satisfaction." March 5, 1990.

SYBASE earned top ratings in eight out of 18 categories:

- Performance in processing on-line transactions
- Performance in decision-support applications
- Providing effective user-defined integrity
- DBMS enforced integrity
- Useful SQL extensions
- Distributed updating, recovery and remote administration
- Extensions to the relational database management system such as semantic, object oriented text and image modeling
- Performance and system monitors

SYBASE SEMINAR SCHEDULE/MAY-AUGUST, 1990

Now that you've gotten this glimpse of what the Open RDBMS can do, we hope you'd like to see more. Please join us for a free seminar. We'll explore a host of RDBMS issues and present a demonstration of many on-line transaction processing and decision support features.

For seminar reservations, or more information about SYBASE use the coupon or call **1-800-8-SYBASE**.

Alabama Birmingham Huntsville	May 22 June 6	Florida Jacksonville Tampa	June 7 May 24	New Jersey Saddle Brook	May 24
California Los Angeles	July 17 Aug 14	Hawaii Honolulu	May 30	New York New York City	June 5 July 10 Aug 1 June 5
San Diego San Francisco San Ramon Santa Clara	May 31 July 11 July 18 June 5	Illinois Chicago	July 12 Aug 2	Syracuse	
Colorado Denver	June 5	Indiana Indianapolis	June 6	North Carolina Charlotte	June 6
Connecticut Hartford Stamford	June 5 May 22	Iowa Des Moines	May 29	Ohio Cincinnati	May 30
District of Columbia Washington	July 11 Aug 16	Massachusetts Boston	July 18 Aug 8	Oregon Portland	May 29
		Michigan Detroit	May 23	Texas Houston	July 17
		Minnesota Minneapolis	July 11	Washington Seattle	June 7
				Canada Toronto	May 24

Lotus

Microsoft

In the real world of multi-vendor environments, SYBASE preserves your prior hardware and software investment while keeping your future options open.

SYBASE SQL Server supports portability to a wide range of strategic computing platforms, including VAX/VMS, UNIX, and OS/2, with PC and MAC connectivity, making it a natural for linking applications residing on different types of machines.

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PCs & WORKSTATIONS

M I C R O B I T S

Patricia Keefe

Charting the course



More to the point. We already told you that Microsoft is introducing a personal computer version of its Powerpoint slide generator product shortly. But a source tells us that the real focus of this announcement will be the addition of charting capabilities into the package that "could serve as glue capable of holding a few Microsoft packages together."

And another thing: "Bill Gates once said he'd have 50% of the spreadsheet market by the summer of 1990, and he ain't even close," observed Lotus Vice-President Frank Ingari last week. To hear Ingari tell it, Lotus has a surprise for Gates. The Impress technology that makes up the core of the forthcoming 1-2-3 Release 3.1 includes text editing, what-you-see-is-what-you-get, annotation and graphics, capabilities that create a complete package that "will beat Excel or any other spreadsheet on its own terms."

Live and learn. Those who don't learn from history are condemned to repeat it. At last week's 1-2-3 Version 3.1 and

Continued on page 55

Intel's I486: A chip too soon?

BY RICHARD PASTORE
CW STAFF

Intel Corp. celebrated six months of bug-free, 25-MHz I486 chip shipments earlier this month by unveiling a 33-MHz version. Industry observers marked the occasion by questioning the new chip's chances of adoption — and the 486 family's prospects of becoming a desktop standard.

"The 486 is still more power

than most single users would need," said George Thompson, an analyst at Datapro Research Corp. in Delran, N.J.

Several business users contacted by *Computerworld* validated this point. "The 486 is premature for our needs," said Alain Vignon, a Compaq Computer Corp. Systempro user at Paris-based construction firm Dumez Group. "We haven't even tested the limits of the 33-MHz 386."

A few years ago, users were similarly diffident toward Intel's newly unveiled 80386 chip, which has since gone on to become the desktop IBM-compatible standard.

However, the 386, a 32-bit chip, was a whole new animal compared with its 16-bit 80286 predecessor. The main difference between the 486 and the 386 is speed. "Basically, the 486's circuitry is the same as the 386," Thompson said.

In addition, users are still waiting for DOS or OS/2 operating systems that exploit the 386's capabilities. There are already 386 versions of network operating systems from Novell, Inc. and Banyan Systems, Inc., as well as some versions of Unix and Xenix. So the incentive to trade up to the 486 is not that strong, Thompson said.

Consequently, "the 486 probably won't become a personal computing standard for the next five years at least," he predicted.

Instead, the 486 will remain
Continued on page 50

FEATURE: INFORMATION CENTER UPDATE

Surviving the info center fad

BY WILLIAM PERRY
SPECIAL TO CW

The information center concept is reaching a crisis point. The darling of the 1980s end-user computing scene, information centers trained and counseled their way to an important role in corporate computing. But the advent in the 1990s of the sophisticated end user has forced information centers to reexamine their priorities — or perish.

Information centers must branch out beyond their fortes of training and purchasing. The main function of the successful information center today is moving the end user from a stand-alone, data-starved user to a network user. Similarly, information centers must move the end-user personal computer

from a clerical processing tool to an integrated workstation.

Companies established information centers to assist end-user computing. They set up information centers within the centralized function to be a support link to end users. During the early 1980s, the information center appeared destined to be one of the major activities of information systems.

Information centers in the 1980s concentrated on the following five activities:

- **Computer stores.** Information centers provided for the centralized acquisition of hardware and software resources needed by the end user.
- **Training.** They provided training for end users in order for them to be effective in the use of computer resources.
- **Counseling/consulting.** They guided end users through the technical activities of computer processing.
- **Communications.** They connected

Continued on page 56



Nikki Middendorf

Perry is executive director of the Quality Assurance Institute in Orlando, Fla., and author of the book *The Information Center*.

Micro Focus brings 370 Assembler to the PC!

The Micro Focus 370 Assembler is a tool which helps maximize the productivity of both the mainframe Assembler programmer as well as the COBOL programmer whose application calls Assembler subroutines.

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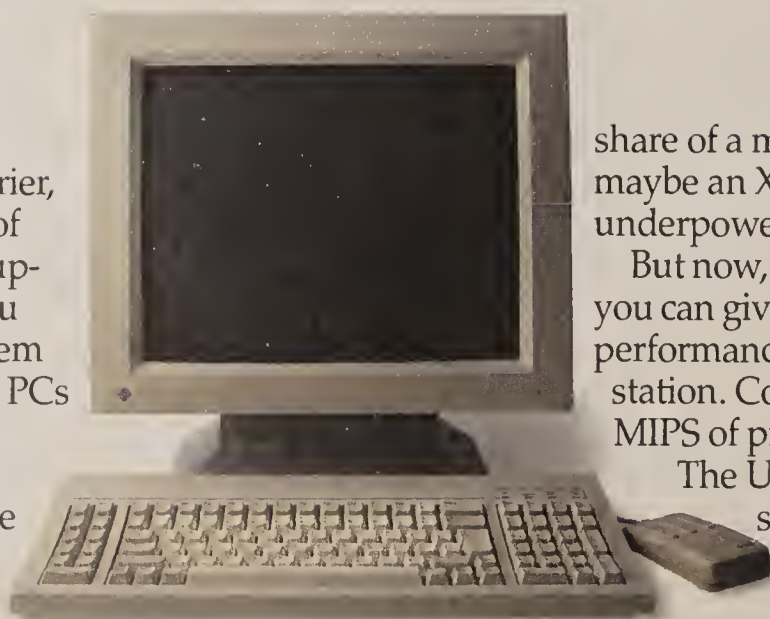
For more information about the Micro Focus 370 Assembler or about other Micro Focus products call **1-800-872-6265** or **415-856-4161**.

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into the back of the monitor. We gave it a high-resolution monochrome display. And since SPARCstation SLC is designed for workgroups, all the files can be stored in a central server. Or on a local disk, if you'd rather.

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Rockwell rallies for PC programming

ON SITE

BY PATRICIA KEEFE
CW STAFF

SEAL BEACH, Calif. — "Think small!" is a worthy admonishment in most cases, but when it comes to cutting back mainframe costs, it can be especially effective.

A hardy team of four former database administrators at Rockwell International Corp. is in the midst of exhorting its nationwide base of 2,500 business applications programmers to move off the host and hop onto a personal computer-based computer-aided software engineering (CASE) development system

tagged "Programmer Workstation." So far, about 25 programmers have decided to make the switch.

"We want to offload mainframe application programming down to the PC whenever possible," said Rebecca MacIntosh, who until last week was Rockwell's CASE project leader. MacIntosh is also supervisor of the company's information center.

The idea is to download application development only. Rockwell uses IBM's TSO environment on its collection of IBM 3090s, on which it runs general business applications such as computer-usage billing.

The primary goal is to cut

down on host processing costs. "We figured out that programmers around here average about \$15,000 a year in TSO costs," MacIntosh said, adding that early users of the still-evolving Programmer Workstation have encountered savings of close to 50%.

For example, a Rockwell division in Richardson, Texas, just announced that it has cut individual programmer costs to \$700 per month, which averages to \$8,400 in TSO costs per programmer annually. Another plus is a 70% decrease in the overall use of TSO.

Rockwell's embrace of CASE kicked off two years ago, in June 1988, with a preliminary version

of its Programmer Workstation, which then used a shell based on IBM's Professional Work Manager. However, it proved to be too slow, so MacIntosh and a team of three other CASE evangelists began casting about for alternatives.

They rejected Easel, which at the time was too expensive at \$20,000 per package, according

ware and software, but over time, MacIntosh said, she and her team have cut the cost in half to just under \$10,000 per station.

Another plus was Mozart's script language, which allows programmers to quickly compile High-Level Language Application Programming Interface code.

A day in the life cycle

Rockwell International utilizes a programmer workstation to offload mainframe application development

Application development and enhancement life cycle

Planning/analysis Design Programming Testing Implement

Programmer workstation

Host applications



Workstation applications

Source: Rockwell International Corp.

CW Chart: John York

Checkout lines to offer more than just candy and waiting

BY ELLIS BOOKER
CW STAFF

CHICAGO — Standing in a checkout line could become a whole lot more entertaining if a promotional system featuring full-motion video advertisements catches on.

Apple Computer, Inc. said this month that it has become a value-added reseller for Advanced Promotion Technology, Inc.'s Vision, a system that uses a Macintosh II, a laser disc player and a color monitor to show shoppers full-motion video advertisements.

Smart coupons?

The system not only runs 10-second advertisements, but it also prints out frequent-shopper coupons based on data contained in a microchip on "smart" cards carried by store customers.

The agreement, valued at more than \$10 million, was announced at the recent 1990 Food Marketing Institute convention in Chicago. Apple sources said the strategic alliance with Deerfield Beach, Fla.-

based Advanced Promotion is the largest commercial multimedia application outside of academia that Apple has developed to date.

Advanced Promotion, created in a 1987 joint venture between The Procter & Gamble Co., The Dun & Bradstreet Co. and Checkrobot, Inc., has been working with Apple on the core technology of the Vision system for the past year.

Separately, Advanced Promotion said last week that Dahl's Supermarkets in Des Moines, Iowa, had launched the first smart card-based frequent-shopper program in the industry. Using the Vision Value Club card, shoppers receive automatic electronic credit, paper coupons and other incentives at the checkout line.

The cards also make the venerable green supermarket coupon books obsolete. Credit, accumulated automatically on the shopper's card each time he purchases goods, can be redeemed for merchandise from a Vision Value Club catalog.



The Vision full-motion video system treats shoppers to 10-second ads as well as coupons for frequent shoppers

to MacIntosh. It has since come down in price.

Eventually, they settled on Mozart System Corp.'s Mozart, a DOS-based graphical applications development environment that provides a shell over a number of CASE tools. These include IBM AD/Cycle-compatible products such as Index Technology Corp.'s Excelsior, Microfocus, Inc.'s Microfocus and Sage Software, Inc.'s APS.

"We have put the whole development life cycle into menus, and the user just issues PC commands by pushing a 'button,'" MacIntosh explained.

Among Mozart's selling points were its support for OS/2's Presentation Manager, its cost and the fact that it is IBM Common User Access interface-compliant. OS/2's multitasking is important because many CASE tools use a lot of memory, and users can do multiple tasks simultaneously.

The entire system started off at \$20,000, including all hard-

This is key, because Rockwell is primarily a Cobol shop, and it has taken longer than expected to teach host programmers DOS. "The main problem is that when they run into problems, some run back to the familiar host world. But we're trying to wean them from mainframe dependency," MacIntosh said.

Lastly, there are the design benefits. "We used to go right into coding, but now we spend more time up front on design," she said.

MacIntosh and her team have spent the last six months converting the Professional Work Manager shell to Mozart. Meanwhile, the Programmer Workstation has standardized on an IBM Personal System/2 20-MHz Model 70 with 4M bytes of memory and a 120M-byte hard disk.

The software side includes the three CASE tools plus Microsoft Corp.'s MS Works, some DOS and PC tools and Attachmate, Inc.'s Extra 3270 link.

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A Technology Fair will exhibit third party products that complement XDB. Several leading CASE tool vendors will exhibit products based on XDB. Also represented are development tool vendors whose products include report writers, screen generators, and 4GL tools.

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Robert was sold on Hewlett-Packard PCs while



he was still in college.



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**HEWLETT
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Team paves way for multitasking DOS extenders

BY PATRICIA KEEFE
CW STAFF

A coalition of DOS-extender and applications developers have come up with a specification for allowing DOS extenders to exploit the capabilities of a range of protected-mode, multitasked environments, including those supporting virtual memory [CW, Feb. 26].

Without this standard, DOS extenders, which are used to let programs access memory space beyond the DOS 640K-byte limit, are often incompatible with multitasking shells such as Microsoft Corp.'s Windows or Quarterdeck Office

Systems, Inc.'s Desqview. The result is collisions and periodic system crashes as add-ins try to do things that DOS cannot do.

The brainchild of a group of nine hardware and software makers, DOS Protected Mode Interface (DPMI) reportedly eliminates all that. DPMI allows multiple applications to coexist in memory on Intel Corp. microprocessor-based computers without cannibalizing one another or interfering with the operating system, said Dirk Smith, a spokesman for Phar Lap Software, Inc., a supplier of DOS extender technology.

"What it really does is eliminate a lot of

problems stemming from the fact that people could not mix multitasking and DOS extenders," said Michael Brooks, Intel's marketing manager of developer services. "You'd buy this neat program that used a DOS extender and then when you went to upgrade to a multitasking environment, you'd lose your investment in that application."

DPMI will be implemented under the following environments: Desqview, Windows, OS/2, Unix 386 and VM/386. As a result, users of DPMI applications will be able to run one package in multiple environments, thereby cutting costs.

DPMI replaces an earlier standard,

Virtual Control Program Interface, or VCPI, which provides an interface between applications using DOS extenders and expanded memory emulators [CW, Feb. 12]. But it does not address the need for multitasking or virtual memory.

Of course, users will have to upgrade their VCPI packages, but Brooks said it will be up to the developers to make it painless. Developers said they will add DPMI support into the next scheduled upgrade of their packages, which in many cases will not ship until next year.

However, Lotus Development Corp. users will get their first taste of DPMI in the 1-2-3 3.1 release slated for delivery in September.

The current version, 3.0, will not run in the Intel 80386 mode of Windows 3.0, said Carl Young, chief architect for spreadsheets at Lotus.

Microsoft will incorporate support for DPMI in Windows 3.0, which is scheduled to ship this week. Locus Computing, Inc., which authored the Merge environment for running DOS under Unix, will ship its upgrade early next year.

The DPMI committee includes Intel, Microsoft, Borland International, Locus Computing, Lotus, Quarterdeck, Rational Systems, Inc., Phar Lap and Phoenix Technologies, Inc.



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Intel I486

CONTINUED FROM PAGE 43

confined to its current niches of local-area network servers and scientific computers, analysts said. In these markets, Intel will sell 400,000 486 chips this year, compared with five million 80386SX sales, estimated Instat, Inc., a research firm in Scottsdale, Ariz.

Even so, Intel is not complaining, analysts said. "Though Intel is shipping quite a bit fewer, it's a very lucrative product because the price is so much higher," said Dean McCarron, vice-president of technology at Instat. The 25-MHz I486 costs \$800 per chip, compared with \$64 for each 386SX chip.

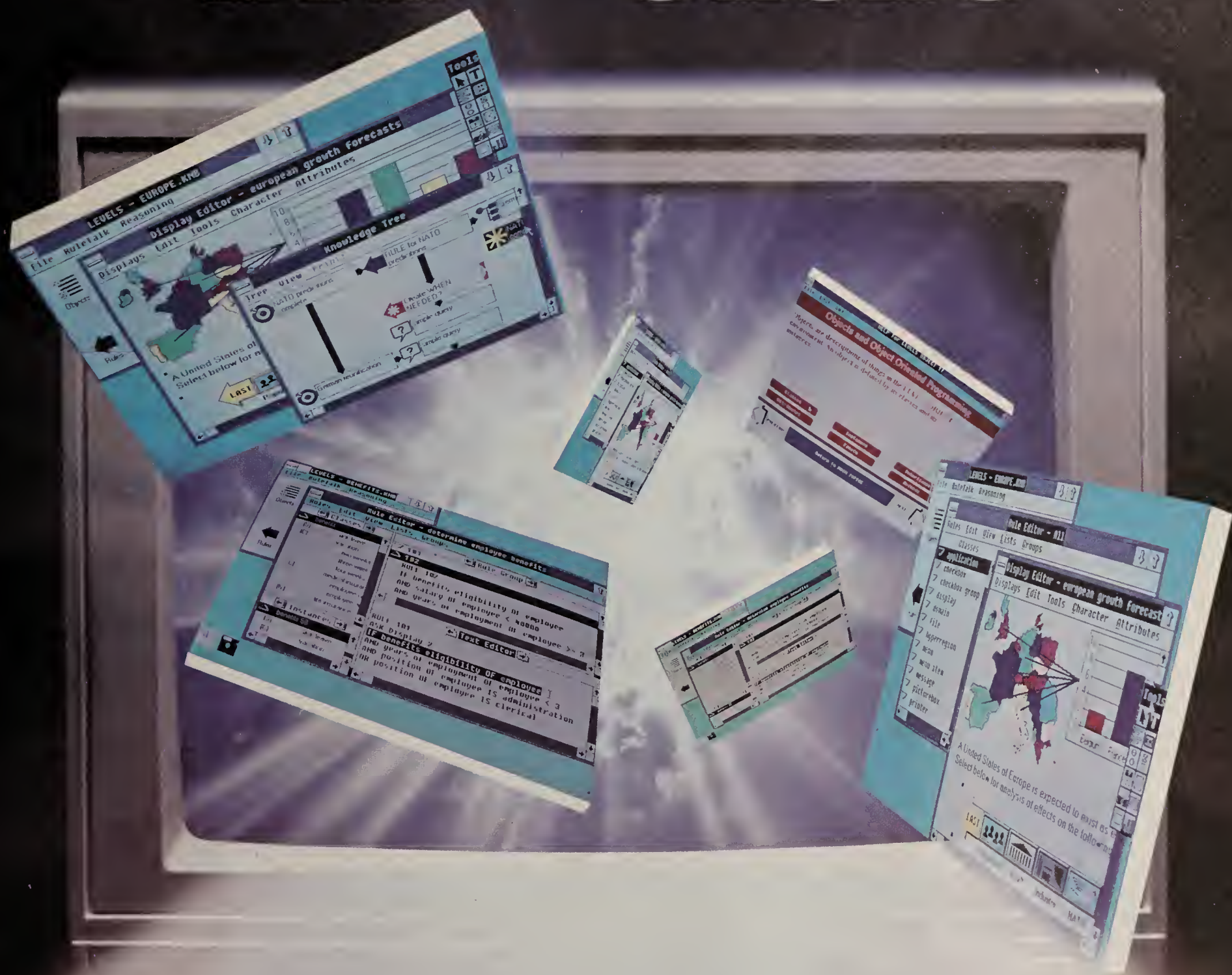
The high price is one factor that may retard sales of the newly available 33-MHz 486 chip. Personal computers outfitted with Intel's latest microprocessor will cost users an additional \$2,500 over the price of a similarly configured 25-MHz 486 PC. Vendors may not be eager to sell such pricey machines, analysts said.

This may be the reason Compaq has not yet announced a 33-MHz 486-based Systempro. When the dual-processor machine debuted in October, Compaq promised to implement the 486 chip when it became available. A company spokeswoman said this is still the intent, but she would not comment on a time frame.

Another discouraging factor: To utilize the 33-MHz 486, manufacturers may face a costly redesign. "If you have a cache system designed for 25 MHz, you cannot just drop a 33-MHz chip in there," McCarron said.

However, some companies that want to present a high-powered image will jump on the 33-MHz 486, McCarron said. One example is NCR Corp., which unveiled a 33-MHz 486 box the same week the chip debuted. NCR, touting its commitment to leading-edge desktop computing, priced its new PCs \$2,500 to \$3,000 higher than its similarly configured 25-MHz 486 machines.

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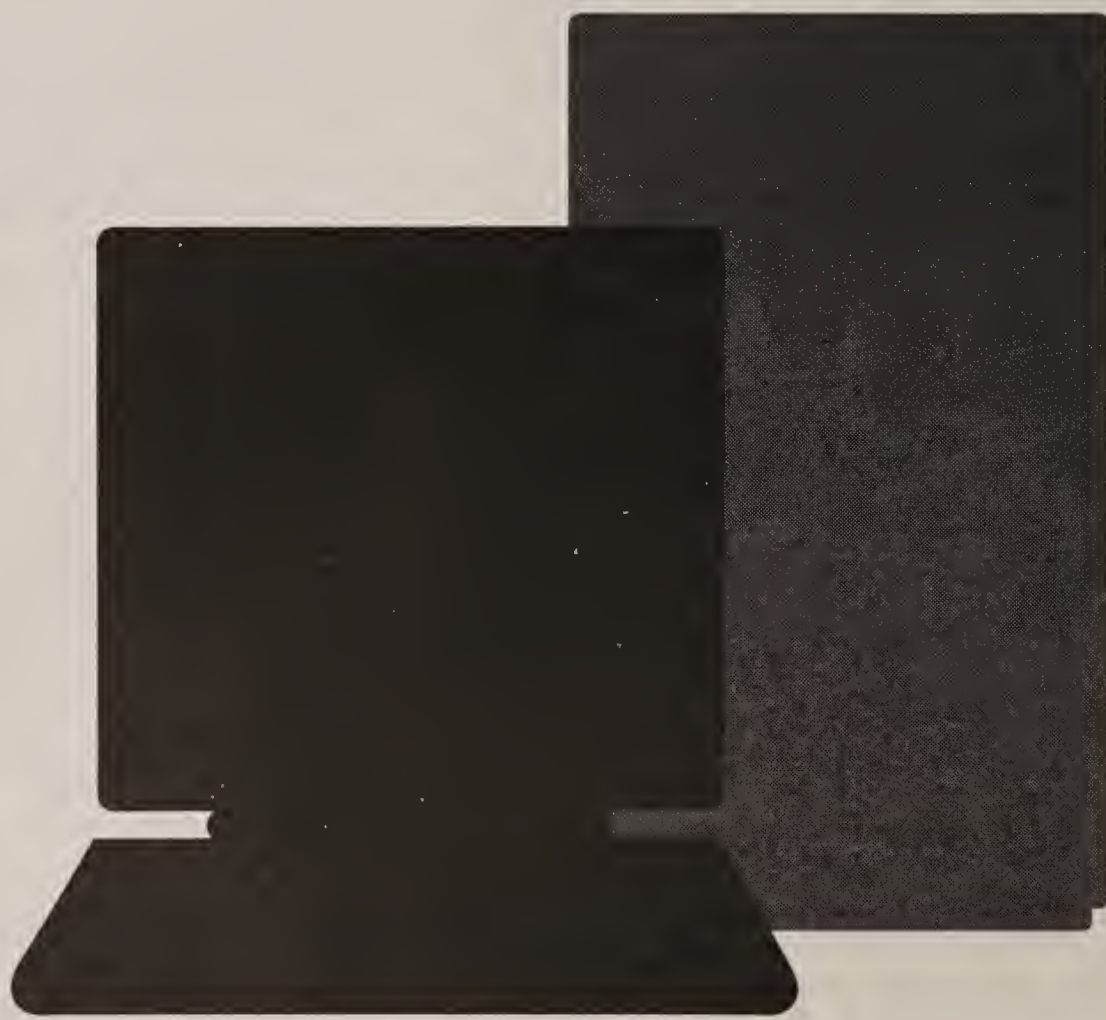
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porations helps explain why: Macintosh was rated 22% higher for user enjoyment. Which, in turn, helps account for why information systems managers in those companies rated Macintosh 22% higher for overall satisfaction and a remarkable 42% higher for user productivity.

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Keefe

CONTINUED FROM PAGE 43

1-2-3/Windows announcements, Lotus fessed up to missing the boat on the Mac market, which now has a 10% market share. (So *where* is that 1-2-3 Mac product?) Figuring that Windows should have about the same share over the next year, Lotus has decided to play this time. "The writing was on the wall when IBM endorsed it last November, and all the beta users of 3.0 have been raving about it," says Goldman Sachs analyst Rick Sherlund.

In case you were wondering. We hear rumblings that Lotus won't introduce 1-2-3 for the Macintosh until 1991. "The market has a fairly long memory," says one source, referring to the Jazz disaster. "They thought Jazz was all we [Mac users] would ever need, and then they fell on their sword." It's expected

that when 1-2-3 for the Mac does ship, it will be a "very complete" product. "Anything less will do Lotus great harm in the Mac market," the source says.

As if you needed another reason. Lotus is folding its tent altogether in word processing. Manuscript seems headed for the retirement home, to be replaced by Windows and OS/2 versions of Wordperfect's word processor. Wordperfect has an installed base estimated at about five million, compared with 90,000 for Manuscript. All of which dovetails nicely with reports that Lotus will sell Manuscript. Lotus doesn't comment, but one analyst quips, "Who'd buy it?"

It's a wonderful life. Things are

looking up for Lotus Chairman and President Jim Manzi — in more ways than one. Sure, he got to crawl out from underneath his desk after shipping in the first five months of this year all but one piece of the spreadsheet maker's multiplatform strategy this year. (The missing piece, obviously, is 1-2-3 for the Mac.) Better yet, he's rolling in the dough — he accumulated \$16,363,000 in 1989, according to *Businessweek's* annual roundup on executive pay. But unlike last year, he failed to make the list of execs "who gave shareholders the least" for their pay.

Don't be fooled. Ingari expects the "so-called" hardware differential between Windows and OS/2 to turn into a "financial mirage" following the release

of Windows 3.0. Lotus maintains that users will encounter a mere 2M-byte or \$200 difference between the two desktop environments.

"3ForU." A third option for users seeking to run 1-2-3 under Windows comes in the form of an add-in tool called 3For3 from Iris Associates, which will provide 1-2-3 Version 3.0 users with the ability to run in full-screen mode under Windows. Iris, which co-developed Notes, and Lotus seem to be of two minds about 3For3. Iris President Ray Ozzie says it's fairly full-featured. Not so, says Ingari, "It's a limited, niche-y thing."

Keefe is *Computerworld's* senior editor, PCs and workstations.

Next in line for upgrade

BY JAMES DALY
CW STAFF

REDWOOD CITY, Calif. — Next, Inc. Chief Executive Officer Steve Jobs responded to sluggish sales recently by announcing plans to soup up the Next computer system and offer both a faster version and a color display by the end of the year.

Some users have complained that the Next machine runs far too slowly to manipulate sophisticated applications, so Jobs said his firm will offer a new model based on Motorola, Inc.'s 68040 microprocessor. Current customers will be able to purchase an upgrade board for \$1,495.

Next officials said the upgraded machines could pack more than 10 times the floating-point performance of the chip at the heart of the current model.

The new systems will also offer photo-realistic color and a graphics accelerator that will be used to maintain a high level of performance with computationally demanding graphics applications, Jobs said.

According to researchers, a faster machine could be vital to the success of the 5-year-old company. While Jobs described annual sales as "healthy but not off the charts," analysts have been less kind.

Market research firm International Data Corp. estimated that fewer than 7,000 Next computers have been sold since its introduction in October 1988, and said that many of these have been spread out among a wide range of product evaluators and software developers. Lotus Development Corp., for example, reportedly has the largest Next installation on the East Coast. In contrast, Apple Computer, Inc. sold more than one million Macintoshes last year.

Jobs, however, defended the firm's growth rate. "We're trying to grow a big old oak tree, and if you look under an oak tree, you'll see a root system that is as big as the tree itself," he said. "We're growing the root system."

Todd Rulon-Miller, Next's vice-president of sales, said it typically takes from 12 to 18 months of evaluation before a product hits its market stride.

When considering new computing technologies,
remember the importance of compatibility.
Weigh the cost of retraining.
Bear in mind the investment you've made in your
current systems. Don't overlook networking options.
Consult with experts and analysts.



Info center

CONTINUED FROM PAGE 43

end users to the centralized computer and other end-user computer facilities.

• **User tools/standards.** They determined which tools were most effective for end-user computing and defined the standards and procedures for end users.

• **Data interface.** They provided views of data contained on the centralized database and enabled end users to access or update centralized data.

Then, a funny thing began to happen in the late 1980s. The concept of the information center began to deteriorate. Corporate cutbacks hit, and IS directors cut end-user services. Furthermore, the end users of the '80s became more computer literate and were joined by a PC-savvy group of college graduates. On top of this, the information center was busy protecting the central site and failed to keep pace with the needs of end users, who were clamoring for connectivity.

Some organizations began to disband their information centers. For example, one information center in a manufacturing company had been established to provide hardware, software and data for end users. The primary benefit the information center offered end users was centralized purchasing. IS managers had difficulty getting computer professionals to work in the information center, which soon began to falter. The function was eventually taken over by the company's purchasing department, with project leaders requisitioning disks for end users.

The major deficiency of information centers is that they have been central pro-

cessing-oriented and not customer-oriented. Those that are succeeding are meeting the needs of their customers — the end users of information services.

Take, for example, one information center in a services company. The information center manager considers herself to have survived what she calls the "information center fad." She says her information center is still viable because of continuous changes in its mission to meet end-user needs. No longer primarily a training entity, it acts as a consultant, helping end users with problem analysis techniques.

Because of this flexibility, she and the center survived budget cuts, turnovers in IS directors and changing technologies.

The makeup of information centers today mirrors the needs of end users. Of the

six activities common for information centers in the mid-1980s, three have diminished, and three have increased in importance — data interface, communications and counseling/consulting.

Also, successful information centers are adding the following new activities:

• **Network control.** Determining the type of networks that are most effective.

• **Virus protection.**

• **Electronic mail and message recording.** Taking over and improving the activities that end users need for day-to-day support.

• **Telephone directories and other resource documents.** Ensuring that the reference documents regularly used by end users are available to them.

• **Bulletin boards.** Creating ways for

users to communicate with one another.

The information center concept is strong, with 80% of large organizations having information centers that are three or more years old, according to research agency Crwth Computer Coursewares in Santa Monica, Calif. However, the information center's continued survival is dependent on its ability to meet the changing needs of the end user.

One IS manager at a large manufacturing company expressed this idea well when he said: "You can solve a technical problem with a business solution, but you can't solve a business problem with a technical solution." End-user computing is a vehicle for solving business problems. Once the information center manager understands that, the function is secure.

Info centers to the max

Based on the demise of some information centers and the tight budgets in information systems, the following three actions will help IS managers make the most of their information centers:

• **Action 1: Conduct an end-user survey.** Success in today's marketplace requires knowing the products and services customers want. End users are an information center's customers. IS managers' input is also important to this survey because the information center must be a leader in end-user processing.

• **Action 2: Prioritize end-user needs.** Using the survey and follow-up interviews, a company needs to determine those activities that are most important to the success of end-user processing in the next one to three years. Again, the IS manager should play a leadership role and help establish priorities.

• **Action 3: Redefine the information center charter and plan of action.** Be prepared to discard those activities end users no longer want. Do this regardless of the perceived needs of the centralized IS function. Refocus the information center resources to meeting these new needs.

WILLIAM PERRY

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NEW PRODUCTS

Peripherals

Identica has announced a 320M-byte tape storage subsystem, the IDT-320, for DC-600 cartridges. The unit has a small computer systems interface (SCSI) and is designed for rapid network backup on Novell, Inc. and other local-area networks.

Disk-to-tape transfers over the byte-wide SCSI bus can occur at burst rates of up to 1.5M byte/sec. in asynchronous mode. System software includes industry-standard utilities, which permit backup by file, date or changed file only, or full image

backup. Unattended backup is permitted by using a clock utility.

The unit comes in an external configuration only for \$2,615.

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408-727-2600

Development tools

Techgnosis, Inc. has unveiled a user-programmable server interface that adds programmable access to host operating systems, applications and services from within tightly integrated personal com-

puter-based front-end development environments.

Sequelink Engine is targeted at programmers working in Apple Computer, Inc. Macintosh and Digital Equipment Corp. VAX/VMS environments.

A server module costs \$4,995, and client modules range in price from \$195 to \$695, depending on volume.

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Boca Raton, Fla. 33487
407-997-6687

Systems

Otec Technologies, Inc. has introduced

two Intel Corp. I486-based systems targeted for personal computer users.

OPC-486-25C offers 64K bytes of cache memory and has reportedly set benchmarks at 4.83 million instructions per second and 113.6 MHz. OPC-486-25X provides 128K bytes of cache memory. Each system includes an I486 processor with 8K bytes of on-chip cache, the vendor said.

OPC-486-25C costs \$4,850, and OPC-486-25X sells for \$6,300.

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Data storage

Abacus Software has announced a software product designed to place large-volume reference books and documents into a personal computer-based program.

Docutrieve runs on PCs and can use a number of file storage media, including compact disc/read-only memory, optical discs, hard and floppy disks, network file servers and mini or mainframe computer storage devices.

The product lists at \$15,000.

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Board-level devices

Hanzon Data, Inc. has announced StellarPS, a laser printer controller designed to provide Postscript-compatible output for the Hewlett-Packard Co. line of Laserjet Series II printers.

The product uses an Intel Corp. 80960KB reduced instruction set computing processor running at eight million instructions per second and includes a proprietary bimodal adapter card for connecting to the Laserjet II.

The personal computer-based device fits into a full-size peripheral slot of an IBM PC XT/AT or a compatible MS-DOS operating system. It includes 4M bytes of dedicated random-access memory and 35 bitstream fonts.

The suggested retail price is \$2,595.

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Software applications packages

U.S. Data Corp. has released a new version of its Factory Link series of application enabler software.

OS/2 Factory Link was designed for use on IBM Personal Computers and compatibles equipped with Microsoft Corp.'s OS/2 operating system or IBM's OS/2 Extended Edition.

The product also functions as an application tool for systems using Distributed Automation Edition, IBM's system enabler for OS/2 Extended Edition. It is also compliant as an application builder under IBM's Systems Application Architecture, according to the vendor.

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Ellis Booker

Testing the waters



Sailors know that it is the sea, not the ship, that holds ultimate control over their fates. During a

storm, how many countless skip-pers have wished they could command the waves?

By analogy, AT&T's hopes to be the provider of choice for integrated network management hinge on being able to offer users the ability to monitor and control not only the private network waters flowing within or between buildings, but also the shipping lanes — the public network lines connecting two cities or two countries.

Last month, AT&T moved closer to this promised shore, introducing important new additions to its Accumaster product family.

First, AT&T took its month-old Accumaster Services Workstation and added support for Accunet and Software-Defined Network facilities.

The move confirmed the predictions of observers, who said the Workstation's initial support for 800 and 900 lines was the tip of the iceberg.

Based on the Unix Sparcstation platform from Sun Micro-

Continued on page 65

ISDN standard's mixed effect

ANSI-approved protocol gives interoperability — and higher costs

ANALYSIS

BY ELISABETH HORWITT
CW STAFF

American National Standards Institute's recent finalization of the 2B1Q ISDN protocol was hailed by some industry pundits as an important first step toward true multivendor interoperability between the user and carrier side of Integrated Services Digital Network. However, the short-term effect on existing ISDN users may turn out to be more detrimental than helpful.

The 2B1Q protocol defines the physical link between a carrier's ISDN switch and the termination unit at a customer's premises that hooks ISDN workstations to ISDN services. Both

Northern Telecom, Inc. and AT&T have announced support of the protocol for their switches, with AT&T's 5E6 upgrade to its 5ESS switch due out around September, a spokesman said.

In the customer premises arena, AT&T and Newbridge Networks, Inc. bumped heads at the recent Supercomm '90 conference, announcing the first termination units to conform to the standard.

Such developments pave the way for users to mix and match customer premises equipment with various carriers' ISDN services, without having to worry about which central office switch a carrier happens to use. However, a number of additional, higher-level ISDN standards must be agreed on and implemented by

the carriers and equipment vendors before true interoperability will be possible, said Jack McDonough, AT&T's product

USERS WHO USE the older standard may be left on their own when it comes to migrating to the new.

manager for ISDN terminals.

One other advantage 2B1Q offers users is that it allows customer premises termination equipment to be 18,000 feet away from the carrier's site, rather than the 11,000 feet allowed under the older ANSI standard, Alternative Mark Inversion (AMI).

However, the fact that 2B1Q

will gradually supersede AMI, both on carriers' and eventually on users' equipment, potentially puts both sides in a multifaceted quandary.

The most obvious problem is the expense of upgrading existing AMI-compatible equipment to 2B1Q compliance. Northern Telecom recently said that it will

allow users and carriers to turn in their AMI interfaces for credit toward an upgrade to 2B1Q compliance.

However, AT&T is not likely to follow suit, McDonough said. Such a program would be far less feasible for the company, which has offered AMI for a couple of years and already has thousands of connections installed, he added. Left unspoken was the implication that Northern Telecom's AMI installations are less numerous.

Those who use the older standard may be left on their own when it comes to migrating to the new. "Bell Atlantic has said that it will go to 2B1Q, which means outfits like ours will have two flavors of ISDN," said Jeffrey Fritz, a data communications analyst at West Virginia University.

Carriers' switches will support both the new and the old ISDN standard, as they support both analog and digital communications today, McDonough said. However, while this saves users from any forced march to full 2B1Q compliance, having "two

Continued on page 65

Agricultural office sows network seeds

BY JIM NASH
CW STAFF

Comparing the information systems equipment scattered throughout the country in federal agricultural statistical offices is like, well, comparing apples and oranges.

Each of the 46 National Agricultural Statistics Service (NASS) offices collects domestic agricultural-production figures. However, their information systems are as diverse as the data they tally: remote-job-entry microcomputers, key-to-disk data entry devices, minicomputers

and a couple of local-area networks.

Now, NASS is working to standardize its systems and networks under a \$16.2 million contract awarded to Sysorex Information Systems, Inc., which will tie the systems together on Novell, Inc. Netware 286 LANs.

"We're just trying to get some standardization," said Bob Griffith at NASS.

Dick Blackmore, director of systems integration at Sysorex,

said that standardizing LANs and LAN-mainframe communications makes common security and maintenance procedures easier and less costly compared with more chaotic settings.



Security is essential, Griffith said. NASS, an agency of the U.S. Department of Agriculture, collects information from individual farmers and large agricultural firms which must remain confidential. What's more, sta-

Continued on page 63



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You've come a long way, DEC

PC Systems Architecture upgrade finally makes DEC a worthy competitor

BY MARYFRAN JOHNSON
CW STAFF

As the new network manager for Insteel Industries, Inc., John Claxton had a definite agenda in mind when he attended a Digital Equipment Corp. users convention earlier this month.

At the top of that agenda was PCSA, DEC's Personal Computing Systems Architecture, and how it could help the North Carolina-based distributor of nails and concrete in its conversion from an IBM midrange platform to networked DEC machines.

What Claxton heard about the latest version of DEC's 3-year-old network integration product family was comforting indeed. "People seem real pleased with PCSA, and as a user of only six weeks, I was glad to hear that," he said.

After listening to a number of beta-test site users of the recently released PCSA Version 3.0 discuss minor problems, Claxton went home to Mount Airy, N.C., determined to schedule a PCSA upgrade and take advantage of Version 3.0's memo-

ry enhancements and performance improvements.

Insteel is using PCSA Version 2.2 to establish local- and wide-area networks throughout a dozen manufacturing sites in several states. VAX 3100s will gradually replace IBM System/34, 36 and 38 midrange computers at the plants, becoming server machines for an enterprisewide network slated to grow to at least 200 personal computers, Claxton said.

All-encompassing

As a significant piece of DEC's Network Application Support strategy, PCSA encompasses a number of client and server software products that integrate the VMS, DOS, IBM OS/2 and Apple Computer, Inc. Macintosh operating system platforms into a company's Decnet network, providing it with transparent access to network services through VAX/VMS hosts.

This past February, DEC extended its network reach to OS/2-based systems, allowing OS/2 platforms to act as limited-function file and print servers.

PCSA's integration capabilities could provide DEC hosts with a much-needed boost in the PC LAN market. On the terminal-server end of the LAN marketplace, DEC has 65% of the market sewn up with its classic minicomputer terminal-to-host environment. Yet in the worldwide PC LAN market, DEC is still a bit player with only 3% market share, industry analysts said.

"They have come a long way from a DOS connectivity standpoint," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass. "Whether it's their LAN server product or VAX/VMS for MS-DOS, DEC is becoming competitive with Novell."

The recent extension of PCSA support to OS/2 and Macs "really gives DEC a decent pitch in its own accounts," Doyle noted. "I wouldn't go as far as to say they'll win new business, but there's a whole lot of business for DEC to win in its own accounts."

Dominic LaCava, vice-president of low-end systems for

DEC, agreed. He predicted at least 60% growth in 1990 for DEC's PC integration business, which includes software, system connectivity kits and boards, PC licenses and PC LAN servers.

That kind of growth translates into \$700 million in revenue this year over 1989 revenue of \$400 million, said Robert Cameron, an analyst at market

DEC's client/server model.

The eventual product will supposedly tie users of OS/2, MS-Windows and Macintosh systems together and allow mail exchange between different systems and networks.

Cameron and other analysts said the principal weakness of DEC's PC integration strategy so far is its reliance on a larger

VAX as a server for the network. "Up until [the OS/2 announcement], you really had to use a VAX as a server," Doyle pointed out. "If you've already got a VAX, that's great. But what if you don't want to buy one?"

LEE DOYLE
IDC

WHETHER IT'S their LAN server product or VAX/VMS for MS-DOS, DEC is becoming competitive with Novell."

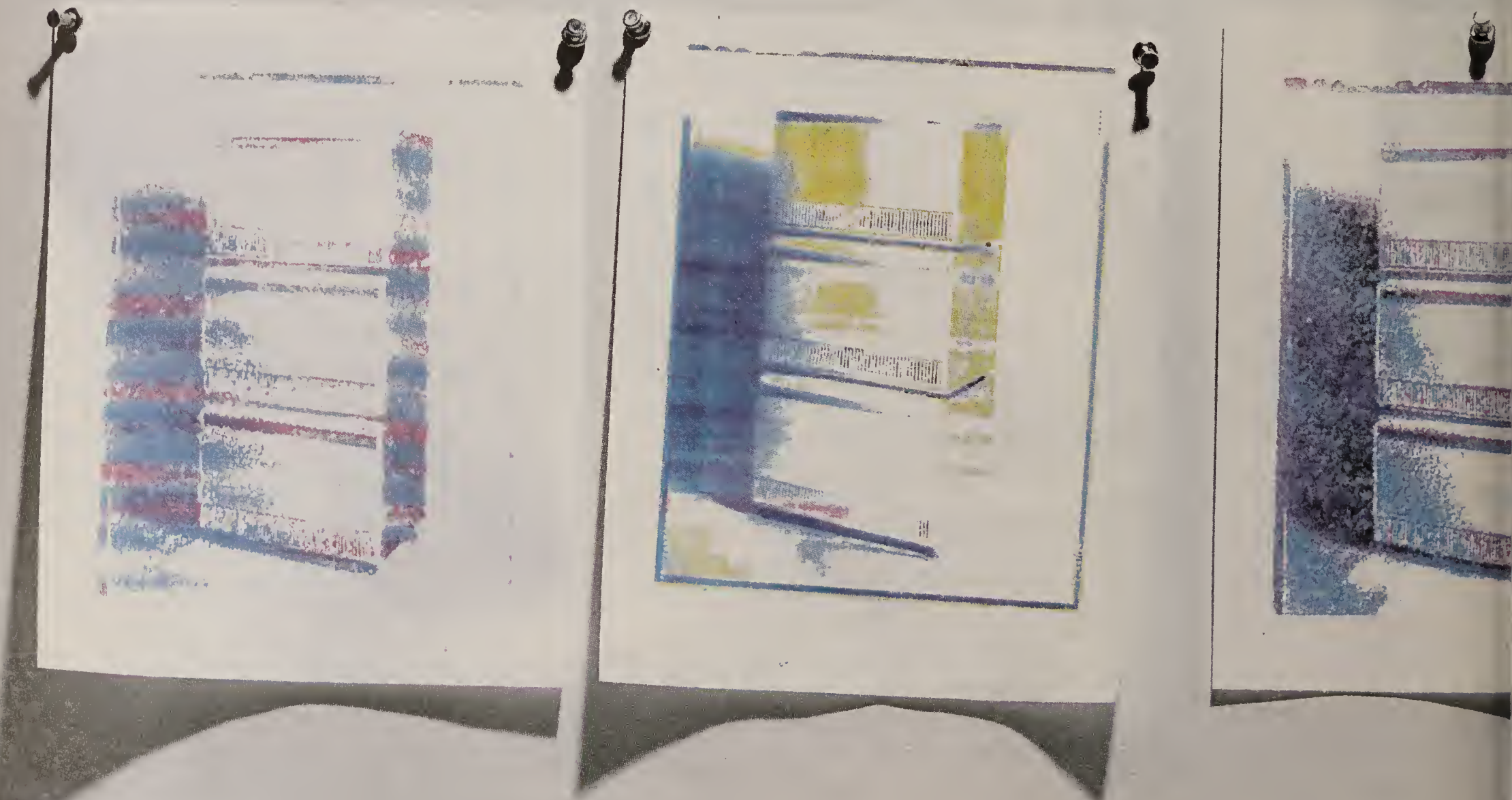
research firm Dataquest, Inc.

DEC has also been ramping up its efforts to convince third-party software developers to write more software under PCSA. Two weeks ago, DEC announced a joint development agreement with Odesta Corp. in Northbrook, Ill., to develop electronic mail software for PC users. The software, which will conform to CCITT X.400 international messaging standards, will act as a desktop client in

As DEC's integration business gathers steam, analysts said the real threat looming ahead on the tracks is IBM, with its Systems Application Architecture strategy and Officevision plans.

"The challenge for DEC is to deliver the applications for PCSA before IBM can roll out its behemoth," Cameron said.

The next pieces of PCSA will include support for Ultrix, DEC's version of the AT&T Unix System V operating system, and imaging capabilities.



NASS

FROM PAGE 59

tistics gathered from this information can have volatile effects on commodity markets and must remain secret until ready for publication.

Common maintenance means savings for taxpayers, he added. NASS expects cost efficiencies when all offices are speaking the same language with the same equipment.

With this in mind, NASS contracted with Falls Church, Va.-based Sysorex last summer for installation and support of a standardized network. Sysorex focuses primarily on federal government systems integration.

Under the contract, Sysorex will install about 1,000 Intel Corp. 80386-based and 800 286-based workstations, as well as 225 386-based file servers from GCH Systems, Inc.

Although current plans call for the networks to run Netware 286 on Ethernet and twisted-pair wire, an operating system upgrade is being reviewed.

"We're probably going to change that to [Netware] 386," given the need for greater printer-management abilities and increased security, Griffith said. Both he and Blackmore said they

expect the upgrade to add a significant degree of protection.

Netware was required by the contract. Blackmore said 3Com Corp.'s 3+Open and Microsoft Corp.'s LAN Manager were rejected. At that time, they lacked the "maturity," or advanced capabilities, to handle NASS' needs. Specifically, he said, LAN

July, Griffith said. Actual standardization, he explained, is expected to be done by the first quarter of 1992.

Field offices now communicate with the Washington headquarters and a mainframe at Martin Marietta Corp.'s Data Systems division in Orlando, Fla., via dial-up modems, satel-

THE ONE-YEAR CONTRACT, which has seven annual renewal options, will be worth \$16.2 million if all options are exercised.

Manager required users to do administrative or network management functions at a server rather than at a standard workstation.

Blackmore said the one-year contract, which has seven annual renewal options, will be worth \$16.2 million if all options are exercised.

To date, Sysorex has installed LANs at NASS' Washington, D.C., headquarters and at field offices in Lincoln, Neb.; Springfield, Ill.; Oklahoma City; Trenton, N.J.; and St. Paul, Minn. Sites in Iowa, California, Michigan, Wisconsin and Florida are scheduled to be completed by

lite dishes and dedicated telephone lines using Attachmate SNA 3270 and National Software Association SNA remote-job-entry adapter gateways. Blackmore said a high-speed communications connection, probably X.25, will replace dial-up within the next two years.

Although there are no plans to link field offices to one another, Griffith said, "there could be some connections between offices. There's some uncertainty about that right now."

He said NASS is already "beginning to see payback from the project. It just makes the support job so much easier."

3Com cuts adapter price in competitive effort

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. cut the price of its Ethernet adapters for the Apple Computer, Inc. Macintosh SE by \$100 earlier this month. The firm also announced plans to support Apple's Phase 2 systems.

Claude Ezran, product line manager for 3Com's adapters, said that the reduction, from \$595 to \$495, is largely a result of cost efficiencies due to greater automation on the company's adapter line. He would not say if other adapter prices would fall.

Sales ploy

Steve Larson, a systems analyst at Smith-Corona Corp., said his perception is that 3Com wants to increase sales with lower prices. He also said he thinks 3Com is turning the corner in its financial doldrums and that the firm feels confident it can afford to be more price competitive.

Smith-Corona, Larson said, has several 3Com routers and servers but no Mac adapters.

This is the second price cut for adapters in less than a year, said John Girton, an analyst at San Francisco-based Van Kasper & Co. Last October, he said, 3Com took \$100 off the price of its IBM Personal Computer and compatible adapter cards.

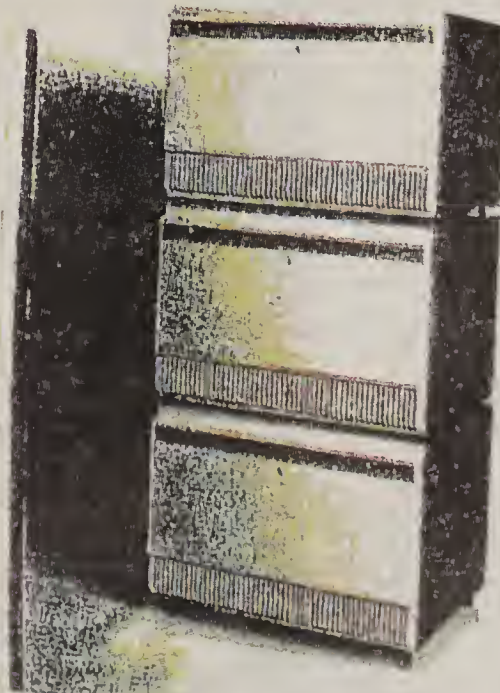
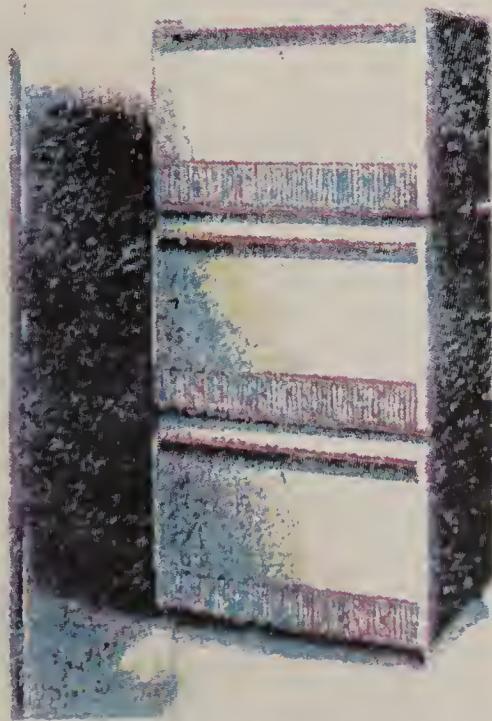
Girton noted that this is the first pricing announcement since the ascension of Eric Benhamou to president and chief operating officer of 3Com.

"Maybe it's a sign that they're going to be aggressive" in the marketplace, he said. "The question is, why did they wait so long with the Mac adapters?"

Glenn Schiller at Dataquest, Inc. in San Jose, Calif., said that 3Com is feeling internal pressure to stimulate sales with price cuts.

Ezran said there has been less pressure to reduce prices on Macintosh hardware than there has been for IBM adapters.

3Com also announced that it will add an Apple Ethertalk 2.0-compatible driver to 3Com's Etherlink/SE in August.



Timeplex brings Link mux family up to date

BY JOANIE M. WEXLER
CW STAFF

WOODCLIFF LAKE, N.J. — Shrugging off industry perception that its products represent "older technology," T1 multiplexer pioneer Timeplex, Inc. recently tossed its Link family of muxes back into the competitive fray with enhancements that allow users to manage bandwidth more efficiently.

"Timeplex is now marching in step with the rest of the industry," said Steven A. Taylor, president of Distributed Networking Associates, a consultancy in Greensboro, N.C. "There are now fine shades of gray differentiating various vendors' products — no more black and white."

Several features have been added to the Link+ multiplexers, including bandwidth pooling, which stockpiles bandwidth as it becomes available, according to Bob Kinderlehrer, senior product manager at Timeplex.

Kinderlehrer explained, "If you have a videoconference set

up for 3 o'clock that will require 512K [bit/sec.] bandwidth, the mux could start saving up bandwidth at 2:30 as calls disconnect. This is less disruptive than disconnecting calls in progress."

This feature is complemented by voice contention, which allows calls to be served on demand from a pool of bandwidth until the pool is dry. Currently available only for digital connections, the feature cannot yet be used with a new \$3,750 four-port low-bit-rate voice module for the Link/2+ that compresses voice into a 16K bit/sec. analog channel.

Kinderlehrer said the voice-contention feature generally sets up a call within three seconds. Taylor noted that, for voice, connections made in "milliseconds" are less likely to frustrate users into hanging up.

Timeplex competitors such as Newbridge Networks, Inc. are said to support 8K bit/sec. voice compression channels. But Taylor said that differentiations such as these are splitting hairs.

"While 8K is making more ef-

ficient use of bandwidth, the lower the bit rate falls, the more likely the quality is to fall off, too," he noted.

Another enhancement, priority bumping, allows lower priority channels designated by the user to be superseded by higher priority calls. In addition, a "grooming" function automatically returns the network configuration to its original design after rerouting of channels.

The new bandwidth management features — not including the voice compression option —

CONNECTIONS made in "milliseconds" are less likely to frustrate users.

will be standard with all new Link+ systems as of July.

Timeplex muxes do not yet support frame relay, an emerging CCITT standard for packetized transmissions that elimi-

nates the need to dedicate bandwidth to a device or type of transmission and maximizes bandwidth use.

The firm also announced that its Integrated Services Digital Network (ISDN) D Channel Server prototype has passed AT&T's Primary Rate Interface compatibility tests. The server interfaces customers' non-ISDN devices — such as analog private branch exchanges and front-end processors — to an ISDN network by converting signaling standards.

Motorola enlists BT Tymnet in truck network

BY ELLIS BOOKER
CW STAFF

SCHAUMBURG, Ill. — Motorola, Inc. recently enlisted the help of packet network provider BT Tymnet, Inc. for its Coverageplus radio-based voice and data network for the trucking industry.

Under the three-year, \$15 million contract with Motorola's Communications Sector, Tymnet will connect the Motorola radio-tower nodes, as well as the subscriber's dispatch locations. The companies said the service will be the first "real-time" te-

lemetry tracking.

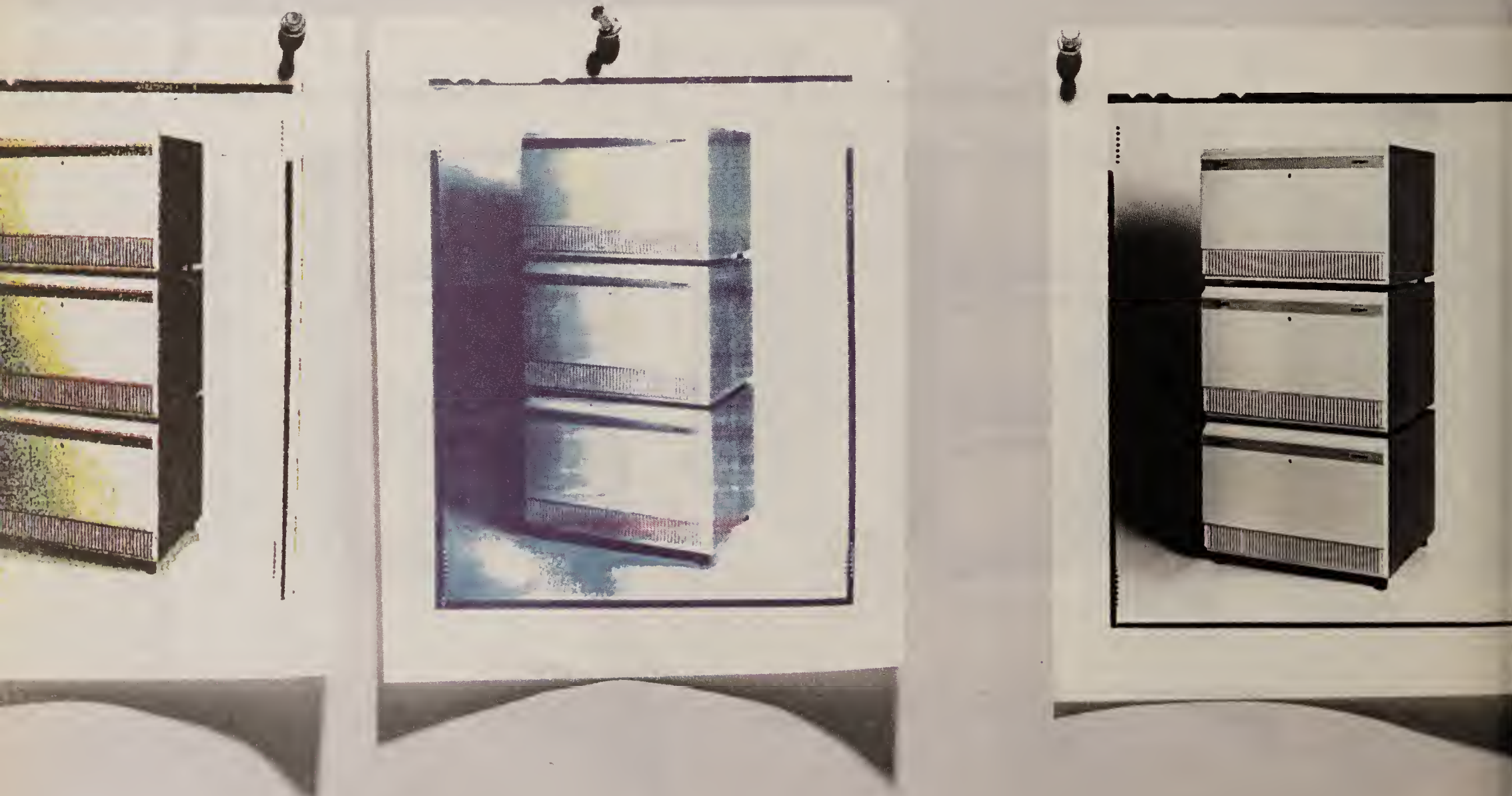
This is Motorola's most recent move into the radio-based networking arena. This month marked the service debut of Ardis, Motorola's partnership with IBM to provide a radio-based public data communications network spanning 8,000 cities and towns across the country.

Each truck will be equipped with a Coverageplus radio and data terminal, which will automatically log on to the nearest Coverageplus node. The node will transmit the location of the truck to a Motorola hub, which will notify the dispatcher over

Tymnet's X.25 network.

Tymnet executives said the new service should improve trucking companies' customer service, because they will be able to tell customers where the truck containing their goods is located. Not only will the dispatcher know the position of every truck, the messages will also be processed by software to advise the dispatcher of the estimated time of arrival and the load status of every truck.

By year's end, plans call for Coverageplus to blanket all major interstate highways in the U.S.



Booker

CONTINUED FROM PAGE 59

systems, the Services Workstation allows the user to access existing Accumaster Network Management Services. In addition to monitoring AT&T's communications lines, however, the basic \$30,000 workstation allows users to upload routing plans directly into AT&T's long-distance network, receive detailed call data within two minutes of its completion and even issue trouble tickets to AT&T electronically.

Significantly, the workstation is billed as part of AT&T's Unified Network Management Architecture (UNMA), its 1987 blueprint for multivendor, multifacility network management.

Indeed, the local component of UNMA, the Accumaster Integrator that AT&T introduced in January 1989, also received a significant upgrade two weeks ago. AT&T said Release 2, which is also implemented on a Sparcstation, will now be able to respond to local network events using automated instructions. These scripts, either provided by AT&T or written by the customer, are an important step in the direction of so-called "self-healing" networks — a keen request of networking users everywhere.

And last week, AT&T upgraded its Accunet Information Manager offering to allow its customers to report problems and track AT&T's steps to restore service on their T1 circuits, from either a stand-alone personal computer or from

Accumaster Integrator.

Taken together, the Services Workstation and the Integrator point the way toward a single control point for a customer's public and private networks, whether they be in a single location, part of a local-exchange carrier network or in an interexchange network. Already, AT&T said, the Integrator can manage about 20 of its element management

AT&T IS NOT alone in offering control and monitoring mechanisms for its public network.

subsystems. AT&T further claimed that another 50 vendors are committed to writing UNMA-compliant interfaces that will allow their products to be managed by Accumaster.

True, IBM has many more Netview installations (and vendors with Netview/PC interfaces) than AT&T has UNMA sites. AT&T does offer a \$225,000 version of the Integrator for Systems Network Architecture (SNA) environments, but for now the SNA interface is one-way only. SNA networks can send alarm and configuration information to the Integrator, but the Integrator cannot, in turn, control the SNA network itself.

AT&T is not alone in offering control and monitoring mechanisms for its public

network. Both U.S. Sprint and MCI offer comparable systems and can be expected to add more products to this list in the near future. (But neither competitor, in fairness, matches the scope of AT&T's ambitious UNMA plan, particularly on the equipment side.)

Meanwhile, keep an eye on the shallows. Already two of the regional Bell holding companies, Nynex and Bell-south, have announced "umbrella" network management systems. And all the regionals offer varying degrees of monitoring and control for their private line and Centrex services.

On balance, however, I think AT&T's strategy for UNMA, with its clear emphasis on integrating public and private networking through a common architecture and a single workstation, is a correct and very powerful concept.

Whether AT&T can be the Neptune of the network management sea depends on how quickly it can provide interfaces to the network management mechanisms provided by other public network providers, notably the local-exchange companies. Fortunately for users, this capability may not be long in coming, given that AT&T and the regionals have endorsed the Open Systems Interconnect protocols for their network management schemes.

Booker is *Computerworld's* Chicago correspondent.

ISDN

CONTINUED FROM PAGE 59

flavors of ISDN" means that some termination units will not be able to talk to other units, Fritz noted. "When Professor Jones plugs in his terminal and it doesn't work [across a link to another university site], we'll have some issues to deal with."

The problem of termination unit incompatibility currently exists only for equipment "at opposite ends of the local loop" — that is, for those using regional operating companies' Centrex-like ISDN services to interconnect equipment across a campus environment, according to Newbridge Vice-President of Product Management Bill Flanagan. ISDN users using different types of termination units can "communicate just fine" over distance, because the equipment actually links up to the interexchange carrier's switch over an ordinary T1 link, not an ISDN interface, Flanagan said.

Upgrading to the new standard is not an issue for users, Flanagan said, because the vendor sells AMI-compliant termination units for limited ISDN communications over in-house wiring, while it will sell its new 2B1Q products for connection to carriers' services. Users who currently use AMI-compatible equipment for private ISDN campus networks have no strong reason to ever upgrade.

However, current users of ISDN services face the probability that the carriers will eventually all migrate to the new standard.

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FCC price caps proposal under fire

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — As expected, a gaggle of telecommunications users and trade associations have weighed in to take stands against an updated proposal by the Federal Communications Commission that would extend the concept of price caps, now in place for AT&T, to local telephone companies.

Critics, who also included long-distance carriers and state regulators, attacked the proposal on a number of fronts, saying it would lead to higher prices and worse service than exist under current regulations.

Under the FCC proposal, the notion of price caps would replace the older rate of return concept, in which providers of telecommunications services are allowed to base charges on a percentage markup of costs.

Adapso, a software and computer services association, joined other groups in saying the proposal is inappropriate because the local exchange carriers (LEC), unlike AT&T, enjoy monopoly power. By decoupling prices and costs, the price cap scheme would invite telecommunications companies to engage in unlawful shifting of costs

from unregulated lines of business to regulated ones, Adapso and other critics charged.

"The plan . . . would also create a perverse incentive for the LECs to increase their profits by reducing the quality of the service which they provide," Adapso said in its comments to

the FCC. The trade group asked that if the commission does move forward with its plan, it exclude special digital services such as information services, electronic mail, electronic data interchange and the like.

The Ad Hoc Telecommunications Users Committee called

the price caps proposal "deeply flawed" and said it would cost consumers billions of dollars over the next four years, leading to reduced network investment, deterioration of service and pricing manipulation detrimental to consumers and would-be competitors.

Critics focused on an FCC proposal to bracket LEC profits within a "zone of reasonable-

ness." They also objected to a scheme by which earnings above a certain level in a given year would be partially shared with consumers in the form of lower rates the following year.

The International Communications Association said the zone of reasonableness would be inherently arbitrary and would unfairly limit consumers' rights to protest rates.

Codex makes digital move

MANSFIELD, Mass. — Codex Corp. last week announced an analog/digital communications platform designed to allow users to migrate gradually and painlessly to digital communications from its analog modem line.

The 3600 Series Communications Platform succeeds the Codex 2600 Series and is backward-compatible with the leased-line modem family, the vendor said. When used as a leased-line analog modem, the platform is said to support speeds of up to 24K bit/sec.

The platform also incorporates digital service unit/channel service unit functionality for digital communications at rates of up to 56K bit/sec. Users can upgrade to higher speeds in 10 seconds or from analog to digital communications in under five minutes by replacing plug-in Flex-Cartridges, Codex said.

The 3600 can be managed by both the Codex 9800 and 9300 Series Network Management Systems. It will also support Codex's Dualview Option for direct connection to IBM's Netview network management system, Codex said. It is scheduled to ship next month at prices ranging from \$2,500 to \$6,500, depending on configuration.

NetWare 386 sets new standards for performance, architecture, sheer power, and flexibility. NetWare 386 is even 486-aware, the first commercial program to be so. It opens up

PC MAGAZINE, Jan. 16, 1990

Although such capacity in a PC LAN is breathtaking, it isn't Netware 386's only boon. Management woes have been greatly reduced. With dynamic resource configuration, a network manager can allocate RAM in real time.

LAN Magazine, Feb. 1990

Novell Netware 386

Novell upped the network ante in 1989 with a true 32-bit server operating system, Netware 386. This version features support for up to 250 users, easier installation and setup, an innovative and more reliable method of

InfoWorld, March 5, 1990

Novell NetWare 386 (version 3.0) permits vastly greater numbers of users on a server, improves performance and security, and is significantly easier to install.

BYTE, January 1990

After everything that's been said about NetWare® 386,

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NEW PRODUCTS

Local-area networking hardware

Farallon Computing, Inc. has introduced a family of twisted-pair Ethernet cards for its Phonenet system, a line of networking

products for Apple Computer, Inc. Macintosh systems.

The Phonenet cards are being offered as a package bundled with Timbuktu Version 3.1, Farallon's network software for file-exchanging and screen-sharing. Features include built-in twisted-pair transceivers, a built-in

RJ-45 connector and an attachment user interface connector.

The cards are initially being offered to users of Macintosh IIs and SE/30s for \$649. A 10-pack of Phonenet cards for Nubus machines in the Macintosh II family costs \$5,995.

Farallon
2000 Powell St.
Emeryville, Calif. 94608
415-596-9020

Xyplex, Inc. has announced a 16-port terminal server option for its Maxserver communications server.

The Maxserver Terminal Server card provides concurrent support for the LAT and Transmission Control Protocol/Internet Protocol.

The cost of the dual-protocol card is \$2,495. A three-year warranty is included. The prod-

uct was scheduled to ship last month.

Xyplex
330 Codman Hill Road
Boxboro, Mass. 01719
508-264-9900

Local-area networking software

Nonstop Networks Ltd. has announced Nonstop Network, a Level 3 fault-tolerant DOS utility that duplicates multiple designated directories to backup devices on a network.

The workstation-based product uses less than 20K bytes of random-access memory and does not run on a server. The product can mirror up to 13 pairs of logical drives anywhere on a network accessible to workstations.

A five-workstation version costs \$1,290; additional users can be added for \$99 each, with a cost reduction after 25 users.

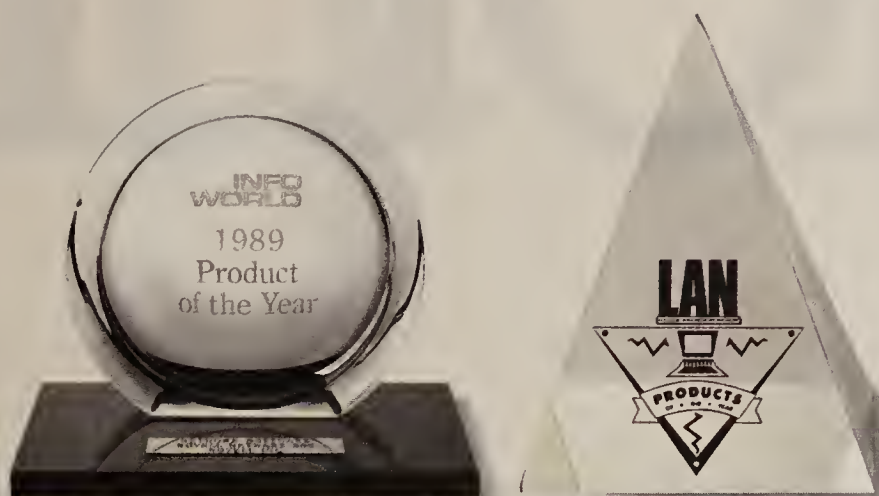
Nonstop
20 Waterside
New York, N.Y. 10010
212-481-8488

Information Builders, Inc. has introduced a software package that converts a single copy of PC/Focus 5.5 into a multiuser local-area network database management system.

The PC/Focus Lanpak contains a Focus database server that supports products such as Novell, Inc.'s Netware Version 2.0a or higher, IBM's Personal Computer LAN program and IBM's LAN Server Version 1.0 or higher.

Pricing for Lanpak starts at \$1,495 for a four-user version and varies according to the number of simultaneous users supported. PC/Focus 5.5 has a list price of \$1,295.

Information Builders
1250 Broadway
New York, N.Y. 10001
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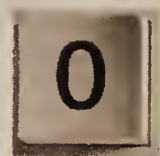
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EXECUTIVE TRACK



Glen Blackmon has been appointed president and chief information officer at **First Interstate Information Systems of Iowa, Inc.** in Des Moines, Iowa, the wholly owned IS subsidiary of First Interstate of Iowa, Inc.

First Interstate Information Systems provides IS services for the parent company's 13 affiliate banks and 87 other community banks in Iowa.

Blackmon was most recently president of First Interstate Management Services, Inc., the IS subsidiary of First Interstate Corp. of Wisconsin, Inc.

Previously, he was a consulting manager at Deloitte Haskins & Sells in Chicago and at Results Consulting Group, a subsidiary of First Interstate Bancorp in Los Angeles. Blackmon holds a bachelor's degree in finance from McNeese State University in Lake Charles, La.

Lawrence A. Lee was named executive director of the newly established **North Carolina Supercomputing Center** at Research Triangle Park in Raleigh, N.C. Lee had been director of the Cornell University National Supercomputer Facility (CNSF) since 1986.

Peter M. Seigel, who has been with Cornell's Theory Center since its founding, was appointed to succeed Lee as director at CNSF. Seigel's most recent position was deputy director for supercomputing technologies at CNSF.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Conituate Road, Framingham, Mass. 01701-9171.

Keeping all the lines open

Few rules and a penchant for local control keep McCaw's IS in touch with customers

BY JAMES DALY
CW STAFF

From a child's-eye view, McCaw Cellular Communications, Inc. must look like a giant Cookie Monster. Since 1984, aggressive 40-year-old Chairman Craig O. McCaw has built the nation's largest cellular phone and pager operation and gobbled up millions of customers through a combination of savvy acquisitions, heavy borrowing and sheer nerve.

However, along with this rapid expansion — including the recent \$6.3 billion buyout of LIN Broadcasting Corp. — came a pressing need to get a handle on the accounts of a customer base of more than 50 million that seemed to enlarge each time the sun appeared on the horizon.

In the information systems department, there was static on the line. The swelling empire was stretching the seams of the current setup, particularly in the highly centralized pager division, which had mushroomed to produce nearly 30% of the company's revenue. McCaw Cellular officials needed a way to keep track of the rapidly expanding number of pager customers without stepping on the toes of regional managers.

By skillfully rewriting negatives into positives, the IS department took advantage of what Craig McCaw said he sometimes feels is one of the company's chief flaws. While Bellevue, Wash.-based McCaw Cellular still scrambles for a sweeping nationwide presence, the IS department saw the company's widely scattered offices as a way to distribute the computational load.

"Centralization is a dirty word



Rich Frishman

McCaw Cellular's Mark DeCamp (left) and Ken Arneson saw opportunity in decentralization of computing resources

around McCaw," said western region controller Ken Arneson. "So it's the last thing we wanted to do."

During the past three years, Arneson and applications manager Mark DeCamp have essentially turned a battleship on a dime, reconfiguring what was formerly a very amalgamated pager billing system into a more streamlined and decentralized one, following a diversification example set by the cellular phone division several years back.

For pager customers, the firm had been using an old billing system, called the customer accounting and inventory system, which ran on an IBM 3090 and a Digital Equipment Corp. VAX 8530.

However, the system was too inflexible and was clearly becoming a burr in the firm's side. "There wasn't anything about the system that wasn't hard-coated," DeCamp explained. "We needed to change it into a system where our options were unlimited."

Continued on page 78

Installing imaging: Gain with little pain

BY CLINTON WILDER
CW STAFF

Sometimes, the best way to introduce a new technology is to *avoid* re-engineering of business processes.

This was the lesson learned in implementing a major image processing system at the Workers' Compensation Board of Ontario, a quasi-public insurance company based in Toronto.

In order to successfully convert 250,000 files containing 25 million documents to electronic media, board President and Chief Executive Officer Alan Wolfson imposed a mandate to create as little disruption as possible.

"Our goal was to replicate the paper environment," said Ray Grenkie, a Coopers & Lybrand consultant who worked on the project. "Alan told me

that if the manual system was slow and stupid, we should make it fast and stupid. It's the smartest thing I've ever been told as a project manager."

Wolfson and Grenkie presented their experience with imaging at the recent Association for Systems Management (ASM) annual conference in Atlanta. They installed the IBM system in about one year and had 600 imaging workstations running by January 1990. "If we tried to change our procedures along with the technology, we'd probably be telling our story at ASM in 1993," Grenkie said.

Like all large-scale imaging systems, the board's implementation has been expensive. At an estimated \$30,000 per workstation, the total

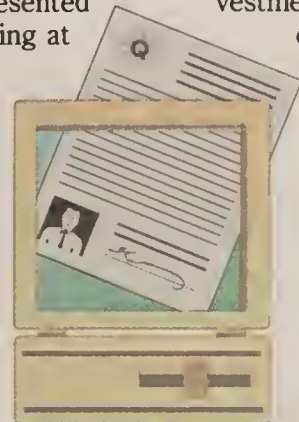
cost will come to about \$18 million — including the IBM 4381 needed to run the system. Wolfson said, however, that the board should recoup the investment in four years — or in

even less time if faster adjudication of claims cuts into the estimated \$16 million per year that the board pays in compensation while claims await resolution.

With the paper system, claims processors rarely had the right file on their desks when a client called, invariably beginning several rounds of telephone

tag. With imaging, the processor calls up the proper file electronically during the first call.

"The paper has disappeared," Wolfson said.



HOW NAPOLEON WON THE BATTLE OF WATERLOO.



ON FEBRUARY 26, 1815, NAPOLEON BONAPARTE SET SAIL from his exile on the island of Elba. His mission was to return constitutional rule to an oppressed France, an idea that other European monarchs had vowed to fight to the death.

After landing at Antibes on March 1st, he set about preparing for war. A war that would culminate near the tiny Belgian village of Waterloo.

Napoleon knew that, to prevail, he would need to strike first. And he knew that such a tactic would require access to precise information. But, with limited resources and little time, a mainframe computer system was out of the question.

Then an aide alerted him to the ideal alternative. Open Systems information processing software from Informix. At the heart of the solution would be INFORMIX® OnLine, the first mainframe replacement database management system.

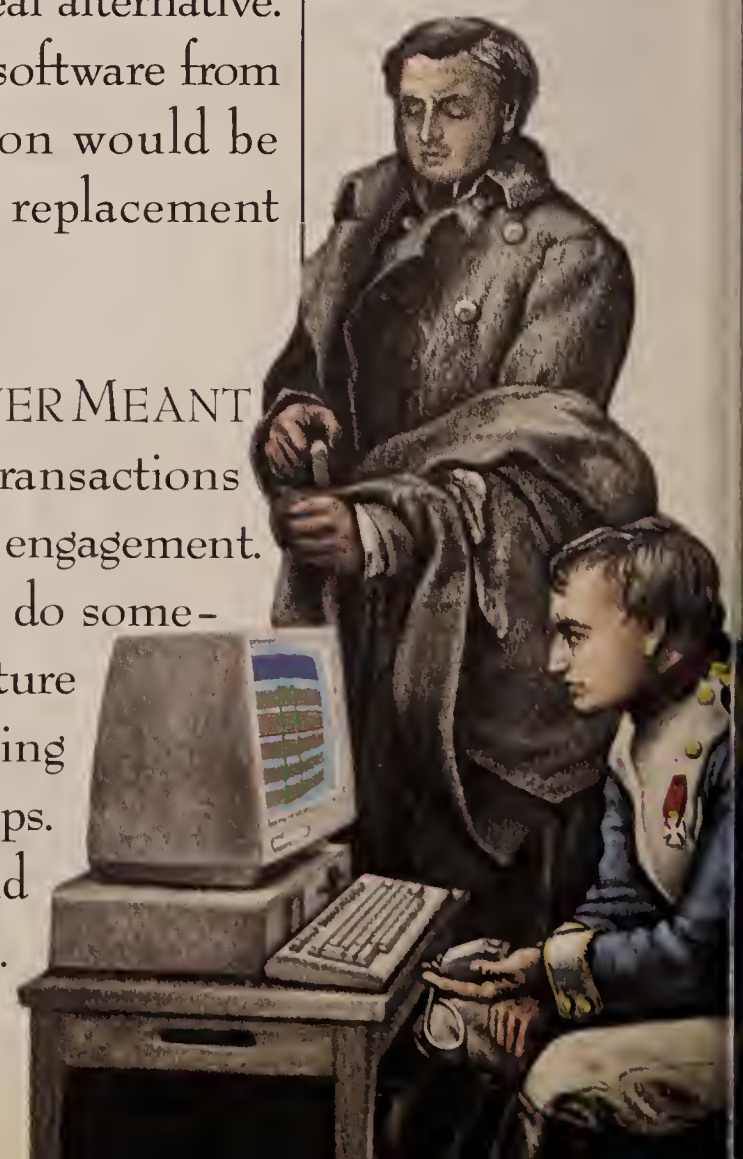
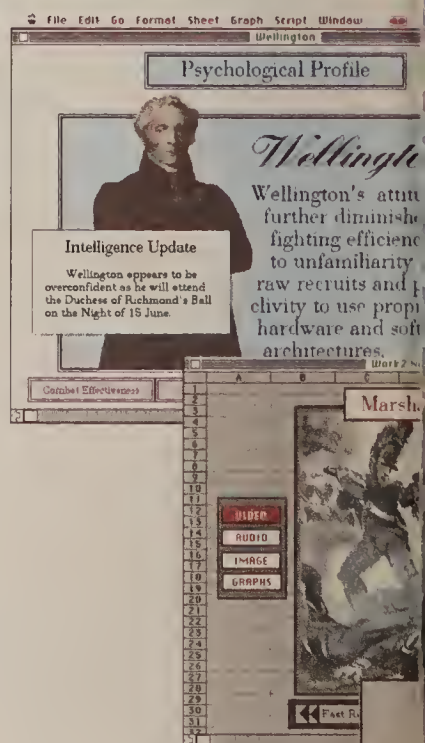
ONLINE'S DISTRIBUTED COMPUTING POWER MEANT Napoleon could process tens of thousands of transactions every minute, at outposts throughout the area of engagement.

But he soon learned that OnLine could do something no mainframe could. Its multimedia feature could store data in virtually any form. Including reconnaissance photos. Three dimensional maps. Multi-colored charts. Even clandestine sound recordings collected by his intelligence network.



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Within three months, the French Commander had amassed an army of 120,000 men, supported by 246 pieces of artillery. The opposition would be a far greater allied force led by the Duke of Wellington.

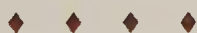
But, while Wellington's staff struggled with traditional database systems that required experts and hours of work to generate reports, Napoleon's cadre had instant access to information through Wingz™ DataLink and INFORMIX-OnLine.

Historians acknowledge that this Executive Information System was perhaps the most formidable weapon in the French arsenal.



ON THE EVENING OF JUNE 16th, NAPOLEON led his army across the Sambre River into Belgium, established headquarters at Beaumont and began his analysis.

As early reports came in, his strategic responses were transmitted to the field.



AT ELEVEN O'CLOCK ON THE MORNING OF the 18th, Napoleon rose from a brief nap and gave the order for his guns to blaze.

Less than two hours into the fighting, more than 300,000 men were engaged in hand-to-hand combat.

The key moment came just before dusk. Napoleon used Wingz DataLink and OnLine to run a simulation projecting Wellington's casualty rate and delivered the coup de grâce.

The order went out to let loose five battalions of his elite Old Guard. Charging into the fray, they crushed what remained of the enemy's resolve.

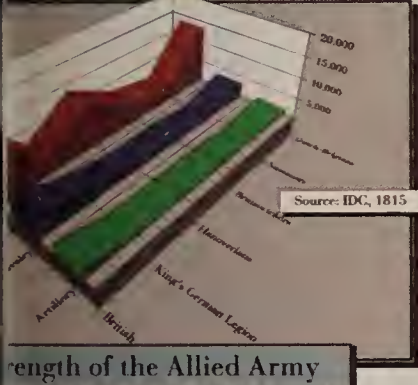
Looking out over the victorious ranks, Napoleon raised a glass of his most precious cognac and uttered the now-famous words, "What a glorious day for France."

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HISTORIANS SUGGEST THAT NAPOLEON HIMSELF KNEW LITTLE OF COMPUTERS. BUT WITH WINGZ DATALINK, THE INFORMIX-ONLINE DATABASE BECAME AS EASY TO USE AS A SPREADSHEET.



THE LOYALTY OF NAPOLEON'S STAFF DID NOT EXTEND TO THEIR CHOICE OF HARDWARE. COMMANDERS SELECTED WORKSTATIONS FROM SUN, IBM, APPLE, HEWLETT-PACKARD, DATA GENERAL, DEC AND NEXT. FORTUNATELY WINGZ AND DATALINK SUPPORTED ALL MAJOR GRAPHICAL USER INTERFACES, FROM MACINTOSH, PRESENTATION MANAGER AND WINDOWS TO MOTIF, OPEN LOOK AND NEXTSTEP.

TAKING
CHARGE

Clinton Wilder

Innovation
or invasion?

As U.S. companies just begin to tap the awesome power of information in marketing and service, a whole slew of questions is about to be raised. Most of them will boil down to this: Where does personalized customer service or target marketing cross the fine line to invasion of privacy?

Consider the following examples:

- In Canada, a food delivery chain called Pizza Pizza asks call-in customers to give their phone number, which gives the operator access to that caller's database file. The operator then says something like, "How was the pepperoni and mushroom pizza you ordered from us last Thursday?"

As a customer, I appreciate this opportunity to say the pizza should have been hotter, and they were a little skimpy on the pepperoni. That's good personal service. I don't even mind a brief sales pitch about the dollar-off promotion on mushroom pizzas scheduled for next week.

- One frequent-flying consultant is fond of telling audiences about his American Airlines experience. He flew on American between New York and Chicago every week for several months, then stopped when a particular consulting job ended. A couple of weeks later, after American's sophisticated data capture techniques noticed the change, an American customer service representative called to find out if the airline had done anything to lose his business. That's good personal service, too.

- An electric utility employee comes into my house to read the meter. Two weeks later, a local contracting firm calls me and says, "We understand you have some water damage on your living room ceiling. Are you interested in a free estimate for repair work?"

Unbeknownst to me, the meter reader was also gathering information of significant value to another business's target marketing. *That's* invasion of privacy.

These issues came up in a presentation by Tod O. Dixon, vice-president of information resources at Northeast Utilities, at the Association for Systems Management (ASM) conference earlier this month. I deliberately used the extreme example above to make my point, but the privacy issues facing information systems and business executives in the 1990s are not so clear-cut.

Hartford, Conn.-based Northeast Utilities is an innovative company that was rated No. 1 in the 1988 *Computerworld* Premier 100 ranking of the most effective users of IS. Northeast is practicing what the progressive consultants preach — rethinking fundamental assumptions about what its business is and recognizing the high value of the information that it gathers in the process of supplying electricity.

But when does innovation become invasion? Dixon says he feels very strongly that a meter reader who enters a home should simply read the meter and leave. But if the meter is outside the house, how invasive is noting that the driveway needs repaving, the gutters are worn or the house could stand a paint job and then selling that data? That's information that any contractor driving by the house could learn.

Nonetheless, many IS managers who listened to Dixon at the ASM session had strong negative reactions to that type of information sharing. They felt Northeast Utilities would be overstepping its bounds.

As information tools ranging from notebook-size computers to distributed

databases become increasingly powerful, IS managers and their business counterparts will be facing thousands of these draw-the-line decisions in the next few years. The information age is a very exciting time to be involved in the IS profession, but the power of information brings new responsibilities to the table.

There is no privacy code of ethics that companies or government agencies agree on. Who is going to make these decisions? Corporate marketing directors, state or federal legislators and consumer advocates will all want to have a say.

However, the public debate will be small compared with the hundreds of corporate strategy sessions on the effective use of information in researching buying patterns or customizing products and

services. As stewards of the technology that produces such information, the IS executive and his staff must take a proactive role in the debate. That role requires a strong combination of understanding the power of technology and the sensitivity of the customer.

Just what IS needs, another hat to wear. It is, however, a very important one. In many cases, smart business and privacy protection should not be in conflict, because no one wants a customer who feels invaded and blames that on your company. But it won't be easy to decide where to draw the line between invasive and personalized service.

Wilder is *Computerworld's* senior editor, management.

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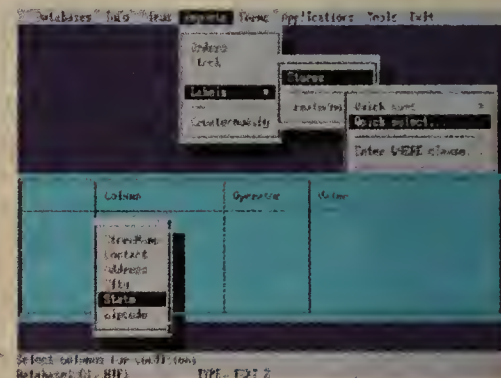
R:BASE® 3.0 helps you create powerful, easy-to-use applications fast. The key is the menu system's built-in code generating power that does routine, time-consuming work automatically. This frees developers to concentrate on customization.

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IS YOUR MIS
DEPARTMENT
GAINING A
REPUTATION?

BOOK REVIEW

Very few answers — but powerful insight into some tough issues

THE NEW REALITIES

by Peter F. Drucker
Harper & Row, \$19.95

With more than 20 titles to his credit, covering management, economic, political and social topics, Peter Drucker has the writing credentials, as well as the consulting experience, to tackle the most difficult

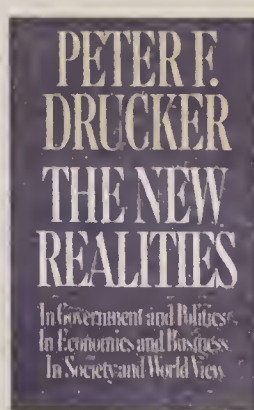
topic of this century: Where will today's dramatic political, economic and social changes lead us and how should we prepare for the consequences?

In a brief 264 pages, Drucker provides powerful insights into emerging new realities in government and politics, economics and business, society and his world view. However, such an ambitious breadth of subject matter imposes depth limitations. As a result, Drucker does a good job of describing how and why changes are happening, but he fails to describe in detail what we should do about them.

Although a reader may wish that Drucker had reined in his topic a bit and ventured a little further into particulars, it is hard to quibble with his refusal to in-

dulge in speculation. "We do not know the answers," he says, "but we do know the issues."

That, after all, is quite a lot, because the issues are profound. For example, Drucker once again addresses his now-popular concept of the information-based organization (first introduced in a 1988 *Harvard Business Review* article). In a chapter by that same title, the author predicts that the typical large business or organization 20 years from now will have no more than half the levels of management of its counterparts today and no more than one-third the number of managers.



This flattening, which he says we are already witnessing, is being driven by changing demographics that are moving the pool of available workers away from manual and clerical skills and toward "knowledge work." Such workers resist the command and control model that business has used for a hundred years, Drucker contends. Economics also dictate this

change. Large businesses are required to innovate and become entrepreneurial.

"But above all, information technology demands the shift," Drucker says.

While an information-based organization can be built without advanced data processing technology, the prevalence of technology and the amount of information these systems provide require sophisticated analysis and diagnostic systems. "Otherwise, organizations will be swamped by the data they generate," the author predicts.

According to Drucker, most computer users still use technology for number-crunching rather than for more sophisticated analysis.

"As soon, however, as an organization takes the first tentative steps from data to information, its decision processes, management structure and the way its work gets done begin to be transformed," he says.

Transformations brought about by information systems include both the aforementioned reduction of management layers and a recognition that top corporate operating managers must decide what information they need to do their jobs and what is the best way to obtain it.

The job of determining what information workers need and in what form they need it should not be left to the IS specialists, Drucker says.

"Everyone in the information-based organization needs constantly to be thinking through what information he or she requires to do the job and make a contribution. This may well be the most radical break with the way even the most highly computerized businesses are still being run today," he says.

Today, even sophisticated users believe that IS specialists know best what information they need. Most also subscribe to the mistaken assumption that the more data they get, the more information they have. While this was valid when data was scarce, data is plentiful today, and this attitude leads to "data overload and information blackout," Drucker says.

Abdicating responsibility will not work anymore, he adds. It is fine to use information specialists as advisers on the how-to aspects of information utilization, but the why and what decisions should not be delegated.

"But information specialists are tool-makers. They can tell us what tool to use to hammer upholstery nails into a chair; we need to decide whether we should be upholstering a chair at all," he declares. "Executive and professional specialists therefore have to think through what is information for them; that is, what data they need. . . . Until this happens, the now popular MIS departments are likely to remain cost centers rather than becoming the result centers they could be."

MICHAEL SULLIVAN-TRAINOR

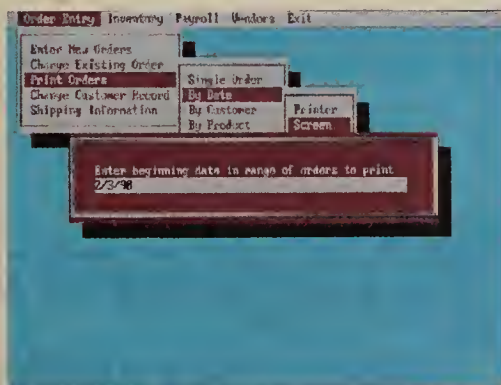
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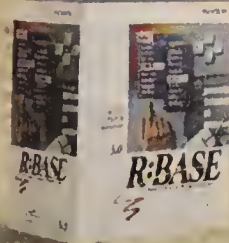
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McCaw

CONTINUED FROM PAGE 73

A rewrite was planned at the central office, but it couldn't be a slapdash job. The IS department had to recognize the concerns of more than 200 users at 15 U.S. regional offices that would need access to the system.

DeCamp also realized that the rewrite needed to be true to the values of the company. The McCaw organization offers few adages that are carved in stone, but two guiding principles are solid: Be a team player, and respect co-workers. "Stubborn insistence that one method and only one method was right has no part in that," DeCamp said.

The core billing system was pared to denominators, such as balance due and amount paid, that were common to all of the 15 offices. Other than that, a great amount of elbow room was given each region to custom-tailor the foundation. The central office wanted to provide the foundation but let each satellite office construct a system that would suit its own tastes and needs.

While the billing papers produced by each office are still essentially similar, something as simple as a local address for customer complaints can be the difference between being perceived as a large unfeeling behemoth and a neighborhood shop.

"We want to give the customers the feeling they are dealing with a small office," Arneson said. "The most important person in our organization is ultimately the one who has contact with the customer. For them, we'll bend over backwards."

One office at a time

The crossover to the new systems began quietly, one office at a time. Each system was allowed to operate until the bugs were worked out. Each subsequent installation became easier, because mistakes were contained at one office and not repeated during future installations. By the time the Portland, Ore., office switched over in early March, "it was a piece of cake," DeCamp said.

The response to the new regionally tailored installation was immediate. "We've learned that the fewer the number of hands involved in a process, the better chance there is of having customer satisfaction," Arneson said. "We don't want our customers to have to go through two, three or four layers of management. Decentralization was a way to carry out that philosophy."

Some pleasant financial wrinkles were also discovered, DeCamp said. With each office manager weeding out unneeded information, the cost of billing began to drop, from \$1.50 per invoice for every 70,000 customers to \$1.03.

Consultant fees also went down. Last year, Arneson said, "a good portion" of McCaw's IS budget went toward project consultants who were brought in to tinker with various sectors of the central system, but that system was flawed.

"When you have a lot of consultants, they can take a lot of expertise with them when they leave, which is dangerous," he said.

Instead, individual managers have gained expertise through experience, which translates into a smoother operation. And that's a signal everyone at McCaw can hear loud and clear.

MANAGEMENT BRIEFS

AMS calls for IS award nominees

Nominations are being accepted through Aug. 15 for the **Fourth Awards for Achievement in Managing Information Technology**.

The awards, sponsored by American Management Systems, Inc. and the Graduate School of Industrial Administration at Carnegie Mellon University, are presented to executives and professionals from the nation's leading organizations who have made outstanding contributions to their organizations through the effective use of computer and communications technology.

Nominations are made by the chief ex-

ecutive officer and other top executives of the organizations. Finalists will be selected after several screening periods. The awards will be conferred in May 1991 in New York.

Last year's winners were from Chrysler Corp., Citicorp, the Commonwealth of Virginia's Department of Taxation, Levi Strauss & Co. and the Royal Bank of Canada.

For more information, contact Jan Dodson, AMS, Inc. in Arlington, Va., at (703) 841-5830.

Engineering students rated **IBM** as the

company they would most prefer to work for, according to a recent survey conducted by New York-based Deutsch, Shea & Evans, Inc. The recruitment firm surveyed approximately 2,100 college students majoring in engineering and computer science subjects on 276 U.S. campuses in 1989.

IBM was rated as the first, second or third choice by an impressive 24% of the students. IBM also topped the list in the 1987 survey. Rounding out the list's top five were AT&T, 13%; General Electric Co., 13%; Hewlett-Packard Co., 12%; and the The Boeing Co., 10%.

More information is available from David Warhaftig, Deutsch, Shea & Evans, 485 Fifth Ave., New York, N.Y. 10017 (212) 687-8100.



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CALENDAR

Speakers from Federal Express Corp., Union Pacific Railroad, MCI Telecommunications Corp., IBM, Southern California Gas Co. and others will highlight the "Service and Quality: Transforming the Vision into Reality" conference scheduled for July 11-13.

The conference, sponsored by Washington University in St. Louis and the IBM Scientific Center, will be held in Los Angeles and is geared to both information systems managers and business managers.

For more information, contact Donna Skaggs at Washington University in St. Louis, (314) 889-5380.

JUNE 3-9

Adapso's 72nd Management Conference. Washington, D.C., June 3-6 — Contact: Adapso, Arlington, Va. (703) 522-5055.

Comdex/Spring '90. Atlanta, June 3-6 — Contact:

The Interface Group, Needham, Mass. (617) 449-6600.

World Industry Congress VII. Washington, D.C., June 3-6 — Contact: Education Department at Adapso, Arlington, Va. (703) 284-5355.

New England Systems Seminar. Waltham, Mass.,

June 8 — Contact: Joel Gormley, Boston, Mass. (617) 631-2410.

JUNE 10-16

Association of Data Communications Users 1990 National Conference. East Brunswick, N.J., June 10-13 — Contact: ADCU, Bloomington, Minn. (612) 881-6803.

Executive Information Systems '90/Canada. Montreal, June 10-12 — Contact: Elizabeth Simpson, EIS Institute, Newton, Mass. (617) 964-4555.

Network Users Group of AT&T Spring Conference. Philadelphia, June 10-13 — Contact: Nugatt, Peoria, Ill. (309) 677-3450.

Administrative Services Conference. Montreal, June 11-13 — Contact: Phil Schechtman, Loma, Atlanta, Ga. (404) 984-3737.

Advanced Systems Outlook. Boston, June 11-12 —

Contact: Technologic Partners, New York, N.Y. (212) 696-9330.

Buying and Selling ISDN: Data Drivers for the '90s. Washington, D.C., June 11-12 — Contact: Telecom Conference Registrar, Alexandria, Va. (703) 683-4100.

CIRS Summer Session. Cambridge, Mass., June 11-14 — Contact: Center for Information Systems Research, MIT, Cambridge, Mass. (617) 253-6657.

8th International Congress of Cybernetics and Systems. New York, June 11-15 — Contact: Kathy Jaeger, Department of Computer Science, New York, N.Y. (212) 772-5213.

International Teleconferencing Association Annual Meeting & Exposition. Washington, D.C., June 11-14 — Contact: Intelemart, White Plains, N.Y. (914) 328-9157.

Mumps: A World Class Technology. Orlando, Fla., June 11-15 — Contact: Mumps Users' Group, College Park, Md. (301) 779-6555.

1990 Internetworking Tutorials. Dallas, June 11-14 — Contact: Interop, Inc., Mountain View, Calif. (415) 941-3399.

The Repository Conference: Including IBM, DEC and IRDS Standards. Boston, June 11-13 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Usenix Association Technical Conference and Exhibition. Anaheim, Calif., June 11-15 — Contact: Usenix, El Toro, Calif. (714) 588-8649.

Computer Integrated Manufacturing (CIM). Boston, June 12-14 — Contact: Tim Regan, Raytheon Service Co., Boston, Mass. (617) 272-9300 ext. 2215.

A/E/C Systems '90. Atlanta, June 12-15 — Contact: A/E/C Systems, Newington, Conn. (800) 451-1196.

The Telecommunications Evaluation: Charting the Course. Nashville, June 12-15 — Contact: Telco Research Corp., Nashville, Tenn. (615) 255-8400.

Rochester Forth Conference on Embedded Systems. Rochester, N.Y., June 12-16 — Contact: Lawrence P. Forsley, Institute for Applied Forth Research, Inc., Rochester, N.Y. (716) 235-0168.

IBM Token-Ring and SNA. Boston, June 13-15 — Contact: Kaptronix, Hawthorn, N.J. (201) 769-4250.

Machock '90. Ann Arbor, Mich., June 13-16 — Contact: Expotech, Inc., Grosse Pointe Park, Mich. (313) 882-1824.

Office Automation Society International Educational Conference. Falls Church, Va., June 13-16 — Contact: OASI, McLean, Va. (703) 821-6650.

Global Communications Worldwide Connectivity Strategies. Washington, D.C., June 14-15 — Contact: Infoline, New York, N.Y. (212) 557-3400.

Wireless and Mobile Communications: Impact on the Local Exchange Network. Washington, D.C., June 14-15 — Contact: Telecommunication Reports, Washington, D.C. (202) 347-2970.

JUNE 17-23

International Joint Neural Networks Conference. San Diego, June 17-21 — Contact: Meeting Management, San Diego, Calif. (619) 453-6222.

Symposium on Image Conservation. Rochester, N.Y., June 17-20 — Contact: SPSE, Springfield, Va. (703) 642-9090.

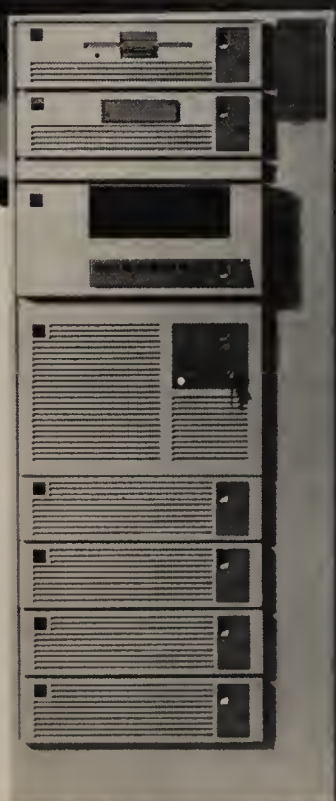
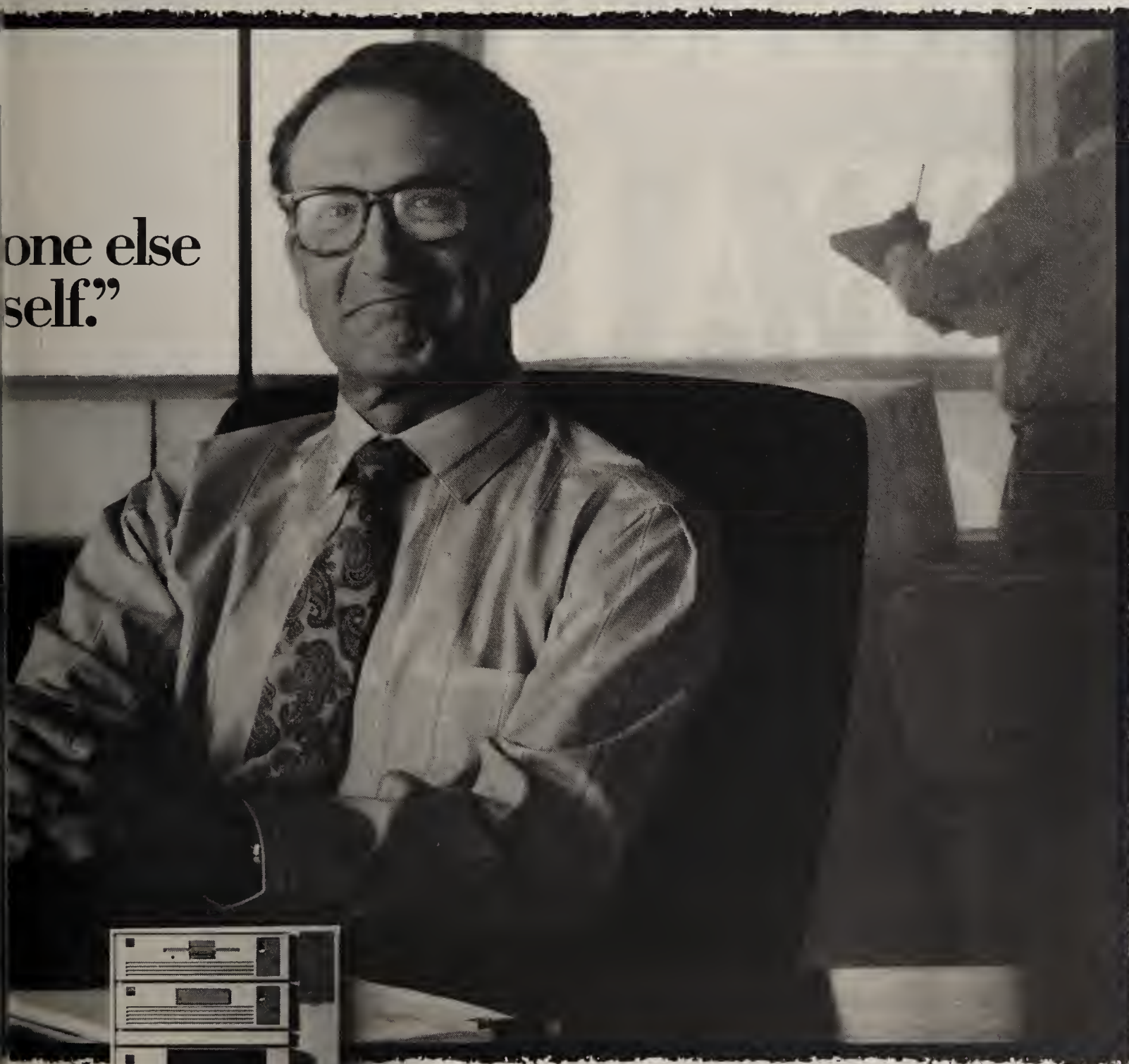
Emerging Software Technologies. Orlando, Fla., June 18-19 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

SQL Databases and Client/Services. Chicago, June 18-19 — Contact: Data-Tech Institute, Clifton, N.J. (201) 478-5400.

IBM Users Computer Security Conference and DEC Users Computer Security Conference. Orlando, Fla., June 18-20 — Contact: Computer Security Institute, Northboro, Mass. (508) 393-2600.

Image Processing Conference. Boston, June 18-20 — Contact: Andree Fontaine, Wang Institute of Boston University, Tyngsboro, Mass. (508) 649-9731.

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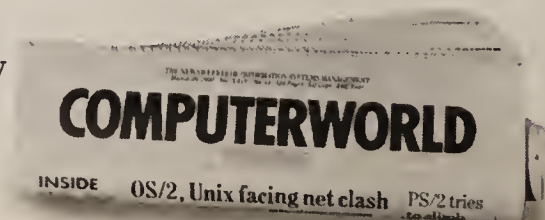
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The Newsweekly of Information
Systems Management

PRODUCT SPOTLIGHT

PORTABLE COMPUTING

There's still a gap between on-the-road and in-the-office

BY ALAN RADDING

Allan Sneider is finally happy: He's found a silent substitute keyboard for his IBM Personal System/2 Model 70 portable computer. The noisy clicking annoyed not only Sneider, a partner at the Boston office of accounting firm Laventhol & Horwath; it also bothered some of his clients, who could hear him type in the information they gave him over the phone. Sneider couldn't solve the problem simply by switching to his desktop unit — he didn't have one.

"Portable computers are all we use. All the professional staff have them instead of desktops," Sneider says. With accountants traveling 90% of the time, the office gradually increased its portable count to 100 of its 160 personal computers. The only people left using desktop computers are office-bound clerical and administrative staff.

Accounting firms are not the only companies that have thought of using a single machine for computing in and out of the office. New developments in portable computers, such as higher end models, more powerful laptops and expansion chassis for less powerful but lighter machines, are prompting a small but growing number of organizations to ponder the basic arithmetic of their PC purchases: specifically, whether it is necessary to buy two PCs — one for the road and another for the office.

Some workers, such as field service personnel, have always used only a portable computer. In 1989, these mobile employees accounted for about 70% of all portable sales, according to Infocorp, a market research firm in Santa Clara, Calif.

Radding is a free-lance writer based in Newton, Mass.

Now, however, another market segment is starting to jump: professionals who divide their time between the office and the road. Although many of these individuals are interested in supplementing their desktop ma-

combination of duties is feasible.

The major reason this question is starting to come up is the introduction of Intel Corp. 80286- and 80386SX-based laptops (weighing 10 to 14 pounds) and even larger transportables

more that will supplant desktop systems is expected to more than triple between 1989 and 1995 — from 5% to 18%, according to Infocorp.

If you were to listen to the vendors of these high-end machines, the two-in-one theory is a model to live by. Portable computer manufacturers are betting that a large segment of the market will replace desktop devices with a capable portable.

One example of a high-end machine rivaling the desktop is Toshiba's T-5200, which lists at \$8,299. It can be configured with a 100M-byte hard disk, a 20-MHz 386-based processor, a 20-MHz coprocessor, a 1.44M-byte floppy disk, a full keyboard with function keys and number pad and an IBM Video Graphics Array (VGA) display with 16 gray scales to reproduce differences among colors. There is also a 32K-byte static memory cache — something many high-end desktop units do not have, says Dean South, senior product manager of PCs at Toshiba America Information Systems, Inc.

However, lugging around all this functionality is no small feat. The Toshiba model described weighs in at a hefty 18.7 pounds.

"At best, only 20% of laptop users take their machines on business trips because they [are too heavy to be] truly portable," says John Moriarty, president of Lapstop Corp. in Salem, Mass., which rents portables at major airports.

Some users put up with the ordeal in order to maintain consistency in and out of the office. Financial analysts at the World Bank in Washington, D.C., needed not only the power of a 386-based machine for creating financial models but also the battery power of a portable for their travel to underdeveloped countries. The bank replaced its desktop units with 16-pound,



Tom Monahan

chines — from 25% in 1989 to an estimated 44% in 1995 — some would prefer to have two machines in one.

However, Sneider is not the only single-machine user who is giving up some functionality and putting up with some discomfort. What users are pondering is whether portable PCs have really evolved to the point where the

(weighing 15 to 22 pounds).

Transportables are the most likely to equal desktop models in performance, features and functionality, says Richard Horan, editor of "Portable Technology Update" in Belle Harbor, N.Y. While many research firms forecast a decline in shipments in this category, the percentage of machines weighing 18 pounds or

INSIDE

The PC Docks Here

Opinions vary on the usefulness of expansion chassis. Page 85.

Product Guide

Laptops and notebooks between 4 and 14 pounds. Page 92.

Product Face-Off

Three models show the range of portable printers. Page 87.



"View from the Front Lines"

Users speak out on their alliance with IS

In business today, the drive for success is affecting all functions within the corporation. With the corporate information system having a greater impact on the business goals of increasing productivity, competitively positioning the company and producing bottom line profitability, IS finds itself working very closely with end users. But how do the users feel about this alliance?

"View from the Front Lines"

A survey on the state of the IS/user alliance today.

Computerworld went in search of user opinion and commissioned a unique survey among 2500 end user managers in large U.S. corporations. Selected at random these managers represent a cross section of all major business functions: accounting/finance, marketing/sales, administration/human resources, engineering/research and development and manufacturing/operations.

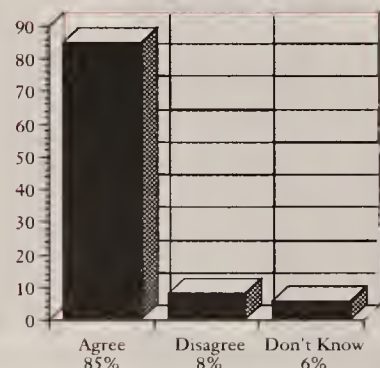
Their views on the IS/user alliance may well be surprising to some. User department managers report an increasingly positive relationship with IS — over 85% believe the IS function is critical to their company's future. And a majority of them feel their IS organization responds effectively to their needs.

The IS/user Alliance

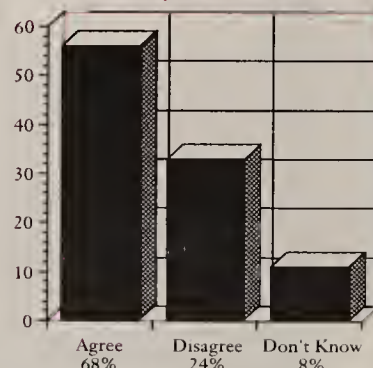
An increasingly united force for achieving success.

Clearly end users today are more aware of what they gain in forming a close alliance with their IS group. They have a greater understanding of information technology as a tactical weapon in achieving bottom line success. And to use this weapon, users are aligning themselves even more closely with the group responsible for acquiring and implementing information technology — IS.

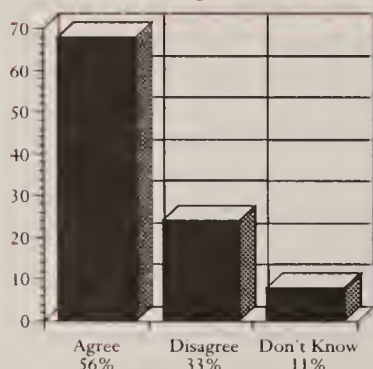
"Information systems are the key to competitive advantage in the 1990s."



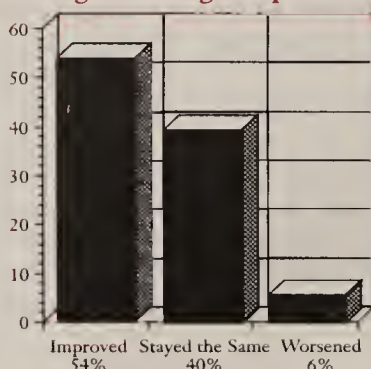
"The IS department responds effectively to user needs."



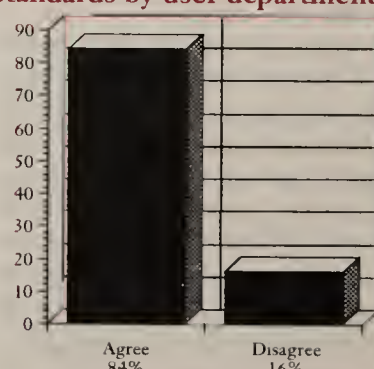
"The IS department does a good job of communicating with us."



"How has your department's relationship with IS changed during the past two years?"



"Among those companies with standards for brands of computer products purchased (80%), there is wide agreement with these standards by user departments."



Source: "View from the Front Lines," Computerworld User Department Survey. Conducted by IDG Research Services, January 1990.

A brochure, "View from the Front Lines," provides detailed information on this timely and candid user survey. Contact your *Computerworld* sales representative for your copy.

COMPUTERWORLD

The Newsweekly of Information Systems Management

On-the-road

FROM PREVIOUS PAGE

386-based Zenith Data Systems Super-sport SXs with a VGA display, or as one bank official dubbed them, "desktops with a handle."

When the analysts are not traveling, an interface box connects units to the corporate local-area network. The single-machine idea also increases security and data integrity, since files are not shared between two computers.

In some cases, the heavier transportables are replacing desktop PC models — but they are not leaving the office. No longer functioning as a portable, the heavier machines are staying home while newer, lighter machines are taken on the road.

Ernst & Young in New York is reassigning older IBM Personal Computer AT portables "to more sedentary usage on managers' desks," says Alex

Kask, senior manager at the firm. Replacing the older machines are 386-based portables, which are becoming standard issue for the professional staff on the Ernst side of the company.

Laptop computers don't suffer from the weight problem of these heavier transportables, and some of the issues that have plagued these lighter machines — such as weak screen resolution and small keyboards — have been alleviated somewhat. However, many users still have enough complaints about these systems to keep them from chucking their desktop models.

One problem is that portable screen resolution has increased, but it still is not practical to work with one all day long because of their small size.

Horan does not think users should have a complaint about the screens, although he admits that a portable display cannot go head-to-head with a desktop CRT.

What many people do is plug in an ex-

ternal screen for use on the desktop, especially for applications such as computer-aided design and manufacturing.

Another compromise that portable computer users have traditionally made is using a smaller and less functional keyboard. While the transportables' keyboards come closer to those of the desktop in terms of size and number of keys, many are still missing numeric key pads, for instance. On many machines, especially laptops, some keys are not included or the spacing between them is too close.

However, Horan says, keyboard quality and layout is very much a matter of personal preference and habit. Many laptop users get so used to their smaller keyboards that the more spacious desktop keyboard may become uncomfortable.

Probably the biggest concern with portable computers as a desktop replacement is a lack of expansion slots. While desktop systems offer five to eight slots, most laptops

rely on proprietary slots, if any at all. Even the transportables offer, at best, only very limited full- and half-size expansion card slots.

"We really prefer a full-size card," says Stephen Rood, manager of micro-computer technology at Coopers & Lybrand in New York, who uses portables on the job but is discouraged from purchasing them as desktop replacements.

Many companies are purchasing an extension chassis to increase functionality on laptops. The chassis is a desktop fixture that provides the portable with extended capabilities such as industry-standard expansion slots, more power, increased storage and LAN connections. With this device, the machines can match the performance and full functionality of a traditional desktop while in the office.

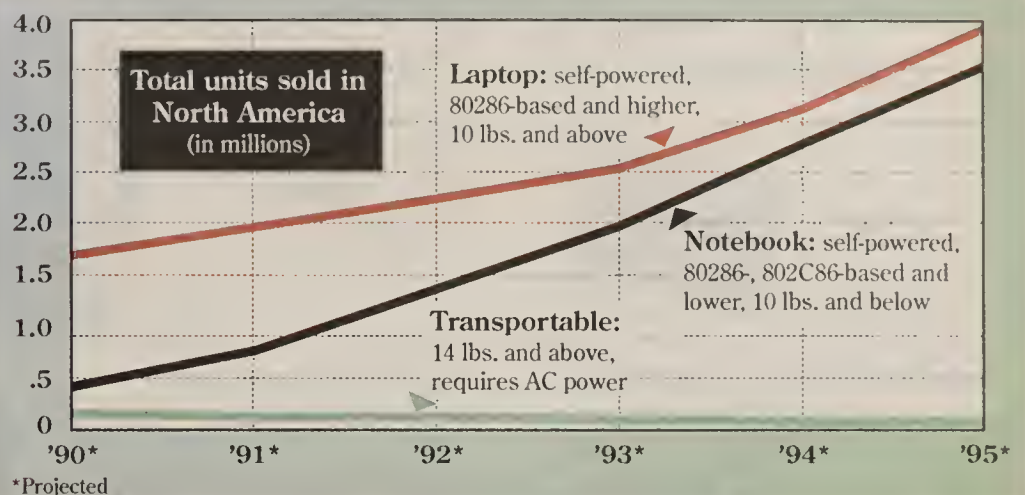
"The docking station type of machines create more interest [as a desktop replacement] than the portables on their own," says Roger Bender, vice-president at Citibank NA's investment banking divi-



Laventhol & Horan's Sneider stays portable at home

Take note

Of three types of portables, notebooks should see the highest growth rate



Source: Workgroup Technologies

CW Chart: John York

sion in New York. Just the same, the division has only 100 portables out of 1,100 PCs.

While there are many proponents of this approach, drawbacks include expense and the consumption of space (see story page 85). In addition, when the portables are taken on the road, the expansion chassis is left behind — and so is the enhanced functionality.

While many users opt to plug in an external monitor and keyboard, this raises the total cost of the portable. When you add up the price of a monitor, keyboard and extension chassis, the cost of portability can soar — especially considering that there is already a 20% to 30% price pre-

mium on these machines.

If portability is not high on your employees' priority list, "why spend the extra \$1,000 for portability when you don't need it?" Horan asks. If you're only taking the portable from the office to home, it can be cheaper to buy two desktop models than to buy a top-performance portable, he says.

Some companies are willing to pay the price. At Allen Automated Systems in Saginaw, Mich., electronic circuitry designers use computer-aided design (CAD) applications to design programmable logic controllers, which are used in factory automation. When they design the

Continued on page 85

ASK THE VENDOR

We are purchasing an Intel Corp. 80386SX-based portable computer from Zenith Data Systems to analyze data gathered during physics experiments.

Does Cyrix plan to produce a math coprocessor for use with the 80386SX CPU that is compatible with Intel's 80387SX math coprocessor?

If so, how does its execution speed compare with that of Intel's?

Joshua Gundersen
Graduate Research Assistant
Physics Dept.
University of California
at Santa Barbara

CYRIX CORP.: The CX-83S87 Fas-math coprocessor, an 80387SX socket- and software-compatible math coprocessor, is available in both 16- and 20-MHz speeds and executes floating-point instructions from two to 10 times faster than Intel's 80387SX, depend-

ing on the instruction type of the calculation.

This translates into a 10% to 300% performance boost for math-intensive application programs.

I have Traveling Software, Inc.'s Laplink 3.00 and am using DOS 4.01. How can I use the device driver included in Laplink with this version of DOS?

David R. Oglesby
VAX Systems Analyst
Anchorage School District
Anchorage, Alaska

TRAVELING SOFTWARE, INC.: The file-transfer portion of Laplink 3.00 will work with DOS 2.11 and higher. However, if you want to use its device driver with DOS 3.31 or 4.01, you must use an updated version of Laplink — Laplink 3.00A.

You can get an updated disk at no charge by calling the customer service number at 800-662-2652.

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Photo courtesy of NASA

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CT	Hartford	Aug
DE	Wilmington	June
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Chassis: Edsel or Caddy?

BY RICHARD PASTORE

Critics call them big, clumsy and expensive. Proponents say they make their computing lives simpler. But all agree that expansion chassis are merely a first step toward real parity in the functionality of desktop and laptop computers.

Expansion chassis are shells that reside on the desktop and contain peripheral ports, hard disk drives and power to run the drives. Users supposedly just snap their laptop personal computers into these stations and presto — instant desktop power and functionality.

However, this technology has not really caught on, according to observers. One reason is the extra expense. Compaq Computer Corp. — one of two big firms (along with NEC Electronics, Inc.) to offer such a product — charges \$1,000 for the extension station for its \$5,399 SLT/286 laptop.

"You're really only gaining a few extra ports, so I'm not sure users would want to pay \$1,000 for that," says George Thompson, an analyst at Datapro Research Corp. in Delran, N.J.

The stations also increase the overall desktop footprint. "They are very big, and a lot of people are looking for ways to shrink the desktop size, not grow it," notes Peter O'Connor, a laptop computing expert and president of Laptop Expositions in New York.

Still, for some users, these extension units represent a viable alternative until laptop machines can wield desktop power by themselves.

At Manufacturers Hanover Corp.'s auditing department in New York, docking stations create a smoother file-transfer environment, according to Ivan Brass, vice-president of information systems.

Brass chose the NEC docking station so that his NEC laptop users could plug their machines into the office's token-ring network, downloading or uploading files from the server with relative ease.

While hooking up the portable to the chassis involves either plugging in wires or sliding the laptop into the chassis, users agree that the effort involved is easier than swapping disks from machine to machine or tying into the desktop machine with a modem.

"It is much more cumbersome to swap disks on the desktop," Brass says. "If you have to reload [an upgrade of Excel], you're talking about five or six disks."

Users appreciate the functionality of the unit so much that a number of managers have volunteered to give up their desktop PCs in favor of a docked NEC laptop and peripheral IBM Video Graphics Array-compatible monitor, Brass notes.

In the Apple Computer, Inc. Macintosh sphere, there is at least one laptop that can be used with an expansion chassis [CW, March 26]. The 9-pound Outbound Systems Laptop System borrows a chip or two from the user's desktop Mac Plus or SE and then functions as a traveling Mac. When hooked up to the Plus or SE via the chassis, it serves as a second contiguous screen and provides a power boost to boot.

Analysts concede that for those users who are too busy to swap disks or need to access a network, expansion chassis make sense. "But if you're not using your laptop much in the office or you don't need to network, then you have a \$1,000 shell just sitting there," Thompson says.

Whether the expansion chassis are a good idea or not, even an NEC spokesman admits that once laptop machines can be designed with full-size ports and desktop functionality, "we could see docking technology going away."

Continued from page 83

circuits, they plug in an external monitor, which provides the resolution to do the detailed work. When troubleshooting faulty circuits on the factory floor, they consult the drawings by using the portable screen.

Because the designers are on the road so much and need high-end functionality wherever they go, "we decided to spend the extra money for a [high-end] portable," says Steven DeVault, CAD coordinator for the company.

As the market grows and manufacturers enjoy the benefits of economies of scale, the cost of portables will drop — but that won't happen soon. "Manufacturing and development costs necessary to shrink the technology will keep prices up through mid-1991," says Gene Talsky, president of Professional Marketing Management, Inc. in Old Lyme, Conn.

Such considerations — cost, lack of expansion ports and small screens — have limited the migration to portables to certain vertical markets, says John Murphy, special project director at Wohl Associates in Bala Cynwyd, Pa. While there is a move afoot to having a portable computer as your only machine, Murphy continues, "the day when general corporate computer users will have only a portable is still a few years away."

Field work-force automation will continue to be the driving factor in the portable computer market for the next two to three years, according to Todd Scofield, president of Hugh Carver Group, a field automation consulting firm based in Mon-

mouth Junction, N.J.

For this user, a lighter, 286-based laptop machine with communications capability is preferred for ease of transport. "The high-performance machines are too heavy to be really mobile," he says.

In fact, these notebook-size machines (weighing 5 to 9 pounds) will continue to drive the growth of portables, says Bruce Stephen, a PC analyst at International Data Corp., a market research firm in Framingham, Mass. (see chart page 83).

At Lutheran Brotherhood Fund, Inc., a Minneapolis-based fraternal benefits society (a nonprofit insurance company), the field sales force is outfitted with laptops. A crucial part of the sales presentation is calculating complex, personalized tables of insurance payments and paybacks called benefit illustrations. The company recently purchased 1,600 Toshiba 3100 SX laptops for this purpose.

Some people like the neat package of a portable computer. Others are drawn to what they perceive as better security in the ability to lock the machine in a safe place at the end of the day. Some just like the consistency of using one machine.

But the greatest asset of portables remains portability, and most users still seem to want to maximize that benefit when and where it is most needed.

As third-party vendors develop add-ons for the portable market, such as facsimile modems for cellular telephones and pocket network adapters, a new market is emerging — the portable office. In the portable office, the portable computer is the desktop workstation. •

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Options in portable printing

BY DAVID BROWN

PRODUCT FACE-OFF

Executives who use portable printers can usually get to a plug when they really need to. But in places such as an airplane or a car, a battery-operated printer is a good machine to have on hand.

Currently, there are six battery-operated printers available, in nine-wire, thermal, thermal-transfer and ink-jet models. Your first job is to decide the output you require. Nine-wire — or impact printers — can handle multipart forms and print only draft quality. Thermal machines print only on coated paper, such as that used in facsimile machines. If you want cut sheets of plain paper, you need an ink-jet or thermal-transfer machine.

The two nine-wires — Axonix Corp.'s

Litewrite-100 and Stafford Computer's Matrix — both use Brother International Corp.'s M-1109 nine-wire engine and are therefore almost identical. There is only a \$30 difference in price, with the Matrix at \$499 and the Litewrite at \$529.

One difference between the machines is size and weight. With its custom plastic case, the Matrix is about ¼-in. smaller than the Litewrite. At 4.2 pounds (with batteries), it is also ½ a pound lighter.

The four nonimpact models are the Eastman Kodak Co. Diconix 150, an ink-jet printer; Toshiba America, Inc.'s Express Writer 301, a thermal-transfer model that also operates as a thermal printer; and SLS Technology, Inc.'s Lapmate OIP-200 and the recently announced machine from CP Plus — both thermal machines and virtually identical.

(In this article, all statistics attributed to the Lapmate apply to CP Plus' new machine as well).

If it is small size you are after, you won't find anything smaller than the Lapmate. Measuring 11.5- by 6.7- by 1.2-in. and weighing 3.6 pounds, it is the smallest portable printer available. It is also thin enough to fit easily into a briefcase or computer bag. A little larger and heavier (10.8- by 6.5- by 1.97-in. and 3.75 pounds), the Diconix model also fits easily into a briefcase with a notebook computer or into the pocket of a laptop computer carrying case. Weighing 4 pounds and measuring 12- by 5.5- by 3-in., the Express Writer is too large to fit in the pocket of a standard-size laptop carrying case.

One weakness of the Lapmate is that there is nothing to hold the roll of paper it prints on, making it cumbersome to use while traveling. On the Express Writer, manual insertion of rolled paper is made easy. The lid opens to serve as a paper guide, and the roll fits easily into an indentation above the platen.

Otherwise, the Lapmate is easy to use. When you first see the four-page operator's manual, it may seem lean compared with the full-blown manuals on the other models; however, these brief instructions turn out to be all you need.

While the Express Writer and the Diconix model both handle cut-sheet paper, the Express Writer is somewhat out of its element in this use. On stationery with a high rag content or even the slightest texture, print quality dips dramatically.

Even when used as a thermal machine

printing on coated paper, this machine's nine-wire emulation (Epson FX-80) is mediocre. Its 24-pin emulation is where it excels.

A caution on the Diconix model is that while it prints single-part forms, it has a maximum print line width of 7.2 inches. Be sure your printed documents do not need a full 8 inches.

The Diconix model offers three choices of speed and print quality and is the only one of the three to provide high-quality resolution at 192 by 192 dot/in. The Express Writer offers 360- by 180-dot/in. resolution and the Lapmate, 180- by 180-dot/in. resolution.

Parts on these machines are not difficult to come by. However, the standard rechargeable nicad C-cell batteries on the Diconix model are widely available, whereas the others' proprietary batteries are available only from the manufacturer.

At \$519, the Diconix model is a lot faster than the other two models, printing at 51 char./sec. as opposed to 35 char./sec. with the Express Writer and 28 char./sec. with the Lapmate. For \$30 less, you get downloadable fonts on the Express Writer. The Lapmate, with its small size, costs \$349.

These printers are all IBM- and/or Epson-compatible. They print for at least 45 minutes or up to an hour on battery power and can be recharged with an AC adapter. •

Brown is founder and publisher of "Portable Technology Update," an industry newsletter based in Ridgefield, Conn.

Color to go: A slow order

BY ALAN ZEICHICK
CW STAFF

Color has come to movie classics such as *Casablanca*; why not to portable computers?

There is definitely an audience for the right color product in the portable market. One out of three users polled in the past six months by *Portable Computing* magazine (from a sample of 45,000) said they were excited about the appearance of color on portable screens. Retailers such as the Laptop Shop in Manhattan say they get frequent requests for color screens on portables.

"I'm personally really impatient for color LCDs to get on the move," says Kim Beeman, president of Engineering Design, a software developer in Belmont, Mass. "One-hundred percent of the biologists that use our software have Super VGA color monitors plugged into their portables."

Enthusiastic as they may be, users like Beeman are not rushing to open their wallets for the two models currently available from NEC Technologies, Inc. and Sharp Electronics Corp.

One problem is color quality. At 640 by 400 pixels, screen resolution on the NEC Prospeed CSX is not quite full VGA, and many observers describe the color as being somewhat washed out. "We need a minimum of full VGA," Beeman says.

Others cite the heavier weight and higher cost of these machines. The AC-powered Prospeed CSX with a 16-MHz Intel Corp. 80386SX processor and 40M-byte hard drive weighs 18.5 pounds and sells for \$8,499. For \$2,700 and 2 pounds less, you can buy NEC's latest monochrome Prospeed SX. It sports the same processor and hard drive and includes a nicad battery pack.

If the extra 2 pounds on the NEC printer sound unappealing, then you're probably not in the market for the 29.8-pound AC-powered Sharp PC-8081. The 8081 sports a fully VGA-compatible 640- by 480-pixel resolution LCD, a 20-MHz Intel 80386DX and an 80M-byte hard drive for \$9,995.

Cost is probably the biggest issue. "We would immediately pay \$1,000 more for a color system," Beeman says, "but we'd balk once the premium reached \$2,000." Most observers agree that mainstream products at an affordable price aren't bound to appear for some time — at least for another 1½ years.

For users with very high-end needs, cost is less of an issue. At Hammel Green Abrahamson, Inc., an architectural design firm in Minneapolis, the designers use portables from Grid Systems Corp. and Apple Computer, Inc. to create computer-aided design drawings. Because the designers show clients' architectural drawings on-screen, color could come in very handy, says Juan Stolsen, associate vice-president at the firm.

The company has already invested \$8,000 in high-end portables, so Stolsen does not flinch at the added price for color. He does, however, balk at the weight. "Thirty pounds is pretty high," he says, referring to the Sharp model.

For some companies, the need is just not pressing enough to merit a purchase. "Color would be a big seller among our insurance agents," says Bill Oldenburg, applications systems manager at Mutual of Omaha in Omaha, "but it's not necessarily right around the corner." At the \$5 billion insurance firm, 800 of the 3,800 independent sales agents have bought Intel 80286 and 80386-based Zenith Data Systems portables with VGA screens for their sales calls. While Oldenburg says a significant number of them would probably buy a color screen, "a bigger concern for us is putting more processing speed into a lighter machine."

Zeichick is senior editor at *Portable Computer Review* in Peterboro, N.H.

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A day in the life . . .

Whether they travel near or far, professionals from many walks of life are finding that a computer in hand provides an edge



Even when the trip is down the hall, the five staff auditors at Diamond Shamrock, Inc. in San Antonio usually pack a portable for official visits to the company's many departments and divisions. And Letty Herrera-Price is pretty happy that the Toshiba T1600 at the end of her arm weighs only about 12 pounds, instead of the heftier Hewlett-Packard Model 110 that the Toshiba replaced.

"It's a lot lighter than what we had before," she says. It is also less cumbersome because the HP machine used an external disk drive.

Portability is particularly important for longer jaunts. At the \$2 billion regional refiner and marketer of petroleum products, the staff auditors spend about 20% of their time traveling — to divisions in San Antonio, Houston, Dallas, Denver and Louisiana.

"With the portables, we can compute in areas that don't normally have PC capabilities," Herrera-Price says. "As long as there's a plug somewhere, I can go in and do my work."

The auditors have found that the portables reduce manual work for auditing within the building. It also improves confidentiality. "We just look at the notes and files and then put the information we need into the computer," Herrera-Price says. "The files themselves don't leave the department."

One major benefit of shifting from Intel Corp. 80286-based Toshiba models from 8088-based HP devices is that they interface directly with the 286- and 80386-based desktop office machines. Also, the same software that resides there is on the portables.

The auditing staff has been sharing two Toshibas since January, when the company replaced the HP portables with IBM Personal Computer clones. According to Richard Brodfuehrer, director of operations auditing, the expense of the Toshibas keeps them from expanding for now. With battery packs and an external keypad, he says, the machines cost about \$3,300 each.

So far, Herrera-Price says, sharing the machines has not posed a problem. In fact, the portables are sometimes available to take home for personal use. "We're pretty good about sharing," she says. •



Some say man's best friend is the dog. But for top executives at Wellfleet Communications, Inc., a local-area interconnection products vendor in Bedford, Mass., a closer companion may be the portable Macintosh from Apple. Like a faithful retriever, the machine follows its owners from office to meeting, to home and abroad.

"I am wed to the Mac," says Lou Piazza, senior vice-president at the firm. In fact, Piazza gave up his old Macintosh when he acquired the portable.

While Piazza doesn't tend to take his portable with him when he travels, he brings it everywhere else, including home to write memos, create documents, plan projects or perform spreadsheet or budget analysis.

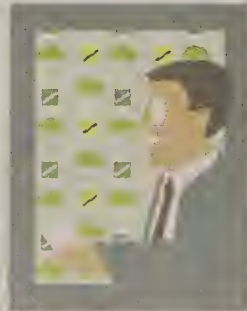
"There are tasks I don't have time to do at the office that I can find time to do at home," Piazza says.

Rather than losing functionality on the lighter machine, Piazza finds only advantages. In fact, he says, it is more powerful than his previous desktop Macintosh. In addition, Piazza avoids having to constantly upload and download files, although he still needs to do a fair amount of backup. When he prints out a document or spreadsheet, he can plug into the Appletalk network from any part of the office.

While Piazza's Mac is a homebody, Jeff Lindholm's has logged enough mileage to qualify for its own Frequent-Flyer award. As Wellfleet's director of international operations, Lindholm travels a lot, and his portable is always the first item he packs. "It's by my side or in my lap when I travel," Lindholm says.

Like Piazza, Lindholm substituted the portable Mac for his desktop machine, using it as a sales tool to develop presentation and forecasting materials. He also performs spreadsheet analyses for pricing systems, evaluates distributor performance, conducts margin and cost analyses and writes correspondence.

Although Lindholm says he would prefer the 17-pound portable to be lighter, the advantages — namely power, graphics ability and the Mac environment — far outstrip the weight disadvantage. •



Not much comes between Francis Vitale and his 20M-byte Zenith Data Systems Super-sport 286. Two years ago, Vitale, regional sales manager at Schweppes U.S.A. in Wayne, Pa., and the rest of the firm's noncarbonated beverage sales force began using Zenith portables as part of a pilot project initiated by Cadbury-Schweppes PLC, Schweppes' parent company in Stamford, Conn.

Vitale says he doesn't leave home without it. "Wherever I go, my computer goes with me," he says.

Vitale uses his portable daily to prepare sales presentations with graphics packages and spreadsheets for his clients; to display live output to clients using the portable and an overhead projector; to write reports of sales calls and send them to headquarters via electronic mail to be distributed among managers; and to send messages to other representatives via E-mail.

Using portables has proven so successful that Schweppes expects to see more uses as well as applications from the central office, says Jeffrey Morgan, director of systems development.

Currently, Schweppes representatives account for 24 portables, with another 15 in its Mott's division, Cadbury-Schweppes' noncarbonated business. Mott's representatives will be the first to benefit from the new sales management decision support system, which will allow representatives to dial up to a mainframe and download client information and other reports to their laptops while they travel.

The new system will include over 100 menu-requestable reports, graphs and histories, extracted from corporate sales history databases. "This type of timely, very detailed information will enable our sales force to also act as business account managers and grow the business," Morgan says.

With the new application and increased power requirements will come bigger and more powerful machines; namely, Compaq 286 SLTs with 40M-byte hard disks and 2M bytes of random-access memory. "It's a sound investment," Morgan says. "Having easy-to-use, comprehensive sales information will make our sales force even more effective." •



Dr. Suzanne T. Smith spends more time at patients' homes than in her office in the Neuro-linguistics Laboratory at Massachusetts General Hospital in Boston. When she arrives on the doorstep, she is carrying a 21-pound NEC 386SX Powermate with a 42M-byte hard drive.

Smith conducts research on patients with Alzheimer's disease, studying their eventual loss of writing ability. By gathering information on the patients' handwriting patterns over time, she hopes to learn about the linguistic and motor factors that contribute to the disablement.

Because the patients can't travel to the hospital, mobility is important. "It is difficult for caretakers to bring the patients into the hospital to participate in research. Also, patients are more comfortable in their own surroundings," Smith says.

In a patient session, which can run up to two hours — Smith collects writing samples on-line using a digitizing tablet and software designed by Meeks Associates in Lincoln, Mass. The software, which runs on all IBM-compatible personal computers and portables, captures handwriting data such as pen position and velocity.

"It is an exciting application of this technology because I can examine the changes in the process of writing as well as analyze finished 'hard-copy' samples," Smith says. For example, she can see where pauses occur or determine what was initially written if someone makes a correction.

Back at Mass General, Smith performs analyses on the collected data — still using the Powermate. She says the machine serves her well in each step of her research. "I see many applications for the portable machine in studying cognitive ability in various neurologically impaired populations," she adds. Last year, Smith logged more than 3,300 miles visiting patients "computer and all," she says. •

Profiles were written by Daniel Dern, a free-lance writer in Belmont, Mass., and Mary Grover, senior editor of Product Spotlight.

When the Noxell cosmetics company decided to change the complexion of its computer support system, several companies applied.

Liebert was the most attractive.

It's really no surprise that one of the world's largest cosmetics companies—maker of Cover Girl, Clarion, Noxzema and Raintree beauty care lines—chose Liebert systems to power its round-the-clock, seven-day-a-week computer center. They needed an uninterruptible power supply (UPS) to perform unattended, providing a consistent flow of computer-grade power with battery-backup for complete protection where it's needed and expected—on the line.

Or that Noxell Corporation chose Liebert because it wanted a system that's reliable and backed by the largest service organization in the industry. After all, those are the base ingredients in the Liebert formula.

The fact that the Liebert sales representative helped with the original site study to make sure the make-up company's computer system foundation was as flawless as possible didn't come as a surprise either. Nor that a MIS manager with 23 years of experience would choose Liebert at each system facelift.

What is a surprise is that the Noxell/Liebert system—which processes every invoice, shipping order, market study inventory and on-line production report in an industry where the competition could turn ugly at any moment—is completely backed up by another Liebert system, just a mile and a half down the road.

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— Frank Martin, Manager/Data Processing
Noxell Corporation, Hunt Valley, MD

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VENDOR	PRODUCT NAME	CPU TYPE	CLOCK SPEED (MHZ)	DIMENSIONS (INCHES)	WEIGHT WITH BATTERY (POUNDS)	RAM STANDARD/MAXIMUM (BYTES)	DISPLAY TYPE	SCREEN DIMENSIONS (L x H)	SCREEN TYPE/SCREEN RESOLUTION (PIXELS)	FLOPPY DISK SIZE (BYTES)	HARD DISK DRIVES ¹ : STANDARD/MAXIMUM	SOFTWARE BUNDLED	PLUGS INTO A FULL-SIZE KEYBOARD/MONITOR	BATTERY LIFE	BASE PRICE W/ BATTERY	OPTIONS
AGI Computer, Inc. ² (415) 683-2800	Model 3602A	80286	12	3.25 x 12 x 14.25	13	1M/4M	Gas plasma	8.75 x 5.75	CGA/640 x 400	One 3.5-in. 1.44M byte	20M/40M	AGI DOS 3.3, GW Basic, hard disk format	No/Yes	AC-only	\$2,800	1,200 bit/sec. internal modem
Agilis Corp. (415) 962-9400	11P0	80C88	10	7.5 x 8.85 x 2	5.5	640K/2M	Backlit supertwist, touchscreen	5.5 x 3.5	EGA/640 x 400	Optional 3.5-in.	RAM/ROM card storage up to 2M bytes	DOS 3.3, Agilis Action Point utilities	Yes/Yes	15 watt hours	\$5,135, plus \$345 for each battery	Accelerator board, battery pack, internal modem
	22P3	80386	16	8.85 x 7.5 x 2.0	7.5	1M/8M	Backlit supertwist, touchscreen	5.5 x 3.5	EGA/640 x 400	Optional 3.5-in.	20M, 40M 2.5-in. removable hard disk	DOS 3.3, Agilis Action Point utilities	Yes/Yes	15 watt hours	\$8,895 (1M memory, 20M hard drive), plus \$345 for each battery	Accelerator board, battery pack, internal modem
Bondwell Industrial Co., Inc. (800) 888-6331	B310/Superslim AT	80C286	12	2.2 x 12.2 x 13	8.5	1M/2M	Supertwist	10.5-in. diagonal	CGA/640 x 200	One 3.5-in. 1.44M byte	40M	DOS 3.3, GW Basic 3.22	No/Yes	1.5-3 hours	\$2,995	Carrying case, battery pack
	B200/Superslim XT	80C88	4.77 or 8	2.2 x 12.2 x 13	8	640K/640K	Supertwist	10.5-in. diagonal	CGA/640 x 200	Two 3.5-in. 720K bytes	None	DOS 3.3, GW Basic 3.22	No/Yes	3-5 hours	\$1,295	Carrying case, battery pack
Chaplet Systems USA, Inc. (408) 732-7950	Halikan LA-30A	80286	6 or 12	3.1 x 12.8 x 16	14	1M/5M	Backlit supertwist	9 x 5.75	CGA, MGA/640 x 400	One 3.5-in. 1.44M byte	20M, 40M	DOS 3.3, GW Basic 3.3	Yes/Yes	1 hour 42 min.	\$2,000 to \$2,200 (20M)	Carrying case is standard, cigarette lighter adapter, 1M- and 4M-byte memory board
Colby Systems Corp. (415) 941-9090	Colby Stealth SE-30	Motorola 68030	16	12 x 14	12	1M/32M	Backlit supertwist	6 x 8	640 x 480	One 3.5-in. 1.44M byte	20M, external 180M/40M	Macintosh 6.04, Proprietary Info hard drive formatter	Yes/Yes	1, 2, or 4 hours	\$4,999	Carrying case, bar-code reader, accelerator board, cigarette lighter adapter, battery pack, 2,400 bit/sec. internal modem
Compaq Computer Corp. (713) 374-4616	Compaq LTE/286, Model 1	80286	12	8.5 x 11 x 1.9	6.2	640K/2.6M	Backlit supertwist	9-in. diagonal	CGA-compatible/640 x 200	One 3.5-in. 1.44M byte	None/20M, 40M	None	No/Yes	3.5 hours	\$3,899	Carrying case is standard, cigarette lighter adapter, battery pack, 80C287 co-processor, 2,400 bit/sec. internal modem
	Compaq LTE/286, Model 20	80286	12	8.5 x 11 x 1.9	6.7	640K/2.6M	Backlit supertwist	9-in. diagonal	CGA-compatible/640 x 200	One 3.5-in. 1.44M byte	20M/40M	None	No/Yes	3.5 hours	\$4,499	See above
	Compaq LTE/286, Model 40	80286	12	8.5 x 11 x 1.9	6.7	640K/2.6M	Backlit supertwist	9-in. diagonal	CGA-compatible/640 x 200	One 3.5-in. 1.44M byte	40M	None	No/Yes	3.5 hours	\$4,999	See above
	Compaq LTE Model 1	80C86	9.54	8.5 x 11 x 1.9	6.2	640K/1M	Backlit supertwist	9-in. diagonal	CGA-compatible/640 x 200	One 3.5-in. 1.44M byte	None/20M	None	No/Yes	3.5 hours	\$2,399	See above
	Compaq LTE Model 20	80C86	9.54	8.5 x 11 x 1.9	6.7	640K/1M	Backlit supertwist	9-in. diagonal	CGA-compatible/640 x 200	One 3.5-in. 1.44M byte	20M	None	No/Yes	3.5 hours	\$2,999	See above
	Compaq SLT/286	80C286	12	4.1 x 13.5 x 8.5	14	640K/12.6M	Backlit	10-in. diagonal	VGA/640 x 480	One 3.5-in. 1.44M byte, optional 5.25-in. 360K byte, or 1.2M byte	20M/40M	None	Proprietary keyboard only/Yes	3 hours	\$5,399 (20M), \$5,999 (40M)	Carrying case, cigarette lighter adapter, battery pack, external battery charger, MS-DOS Versions 3 and 4, desktop expansion base, 60M-byte tape cartridges, 2,400 bit/sec. internal modem
Cordata Technologies, Inc. (a subsidiary of Daewoo Electronics Co. Ltd.) (213) 603-2901	CPC-9300	80386SX	8 or 16	3 x 14 x 11.5	14	1M/4M	Backlit supertwist	8.5 x 6.5	VGA/640 x 480	One 3.5-in. 1.44M	40M	DOS 4.01	No/Yes	4 hours	\$3,495	Carrying case, battery pack, numeric keypad, 2,400 bit/sec. internal modem
Data General Corp. (800) 328-2436	Walkabout/SX	80386	16	3.2 x 14.2 x 15.7	13.5	1M, 2M/8M	Backlit page white	10.25-in. diagonal	VGA/640 x 480	One 3.5-in. 1.44M or 720K, one external 5.25-in.	40M	DOS 4.01, GW Basic, LIM 4.0	Yes/Yes	3-4 hours	\$4,995	Carrying case, bar code reader, battery pack, three slot expansion unit, Starlan network card, portable printer
Datavue Corp. (404) 564-5555	Spark	80C88	4.77 or 9.54	13.2 x 13 x 2.5	9.5	640K/640K	Backlit supertwist	9.5 x 4	CGA/640 x 200	Two 3.5-in. 720K bytes	None/20M	DOS 2.11	Optional/Yes	4 hours	\$1,549	Carrying case, cigarette lighter adapter, battery pack, 1,200, 2,400 bit/sec. internal modem
	Snap 1+1	80C88	4.77 or 9.54	13 x 13 x 3.2	10.5	640K/640K	Backlit supertwist	9.5 x 4	CGA/640 x 200	Two 3.5-in. 720K bytes	None/20M	DOS 3.3	Optional/Yes	3 hours	\$2,494	See above
Epson America, Inc. (800) 922-8911	Equity LT, FDD model, HDD model	NEC V30	10	3.1 x 13.6 x 12.2	12.6	640K/640K	Supertwist, backlit supertwist	9.75 x 4.5	CGA/640 x 200	Two 3.5-in. 720K bytes (FDD model), one 3.5-in. 720K bytes (HDD model)	20M (HDD model), none (FDD model)	DOS 3.2, Traveling Software's Laplink	No/Yes	2-7 hours (FDD model), 1-4 hours (HDD model)	\$1,395 (FDD model), \$1,895 (HDD model)	Carrying case, cigarette lighter adapter, 300-, 1,200 bit/sec. internal modem
Fora, Inc. (408) 944-0393, (800) 367-3672	LP 286C	80C286	8 or 16	4.3 x 13.7 x 8.5	14	1M/8M	Backlit double supertwist	8 x 6	CGA, EGA, VGA, MDA, monochrome/640 x 480	One 3.5-in. 1.44M byte	20M/40M	DOS 4.01, GW Basic	Yes/Yes	2 hours	\$4,195 to \$4,425	Carrying case, battery pack, 300, 1,200, 2,400 bit/sec. internal modem

¹Internal hard disk drive unless otherwise noted.

²AGI's Model 3602A needs external power source. All other models listed can run on battery power.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

VENDOR	PRODUCT NAME	CPU TYPE	CLOCK SPEED (MHz)	DIMENSIONS (INCHES)	WEIGHT WITH BATTERY (POUNDS)	RAM STANDARD/MAXIMUM (BYTES)	DISPLAY TYPE	SCREEN DIMENSIONS (L x H)	SCREEN TYPE/SCREEN RESOLUTION (PIXELS)	FLOPPY DISK SIZE (BYTES)	HARD DISK DRIVES ¹ : STANDARD/MAXIMUM	SOFTWARE BUNDLED	PLUGS INTO A FULL-SIZE KEYBOARD/MONITOR	BATTERY LIFE	BASE PRICE W/BATTERY	OPTIONS
Grid Systems Corp. (800) 222-4743	1450 SX	80386SX	16	2.6 x 11.5 x 12.5	11.2	1M/5M	Backlit	10-in. diagonal	VGA/640 x 480	One 3.5-in. 1.44M byte	20M	DOS 3.1	Yes/Yes	2 or 4 hours	\$5,294 (2-hour), \$5,394 (4-hour)	Carrying case, cigarette lighter adapter, battery pack, calculator, 2,400 bit/sec. modem
	140 XT	NEC V20	8	3.5 x 12.5 x 14	12	768K/768K	Backlit supertwist	10-in. diagonal	CGA/640 x 200	One 3.5-in. 720K byte	20M	DOS 3.3	Yes/Yes	3-4 hours	\$2,550	Carrying case, cigarette lighter adapter, battery pack, 1,200, 2,400 bit/sec. modem
	1535 EXP	80386	12.5	3.7 x 11.5 x 15.1	12	1M/8M	Backlit, optional gas plasma	10-in. diagonal	CGA/640 x 400	One 3.5-in. 1.44M byte	None/100M	None	Yes/Yes	2 hours	\$5,525	Carrying case, cigarette lighter adapter, battery pack, 2,400 bit/sec. modem
	1530	80386	12.5	2.5 x 11.5 x 15	13	1M/8M	Backlit, optional gas plasma	10-in. diagonal	CGA, optional VGA/640 x 400	Two 3.5-in. 1.44M byte	None/100M	None	Yes/Yes	2 hours	\$3,995	See above
	Gridlite XL	80C86	4.77 or 8	3.1 x 13 x 11	9.5	128K/1M EMS	Black and white reflective	10-in. diagonal	CGA/640 x 200	One 3.5-in. 1.44M byte	None/20M	None	No/Yes	3-4 hours	\$1,950	Carrying case, cigarette lighter adapter, battery pack, 2,400 bit/sec. internal modem
Hyundai Electronics America (408) 473-9200 (800) 727-6972	Super-LT3 Model HLT 2012	80C286	8 or 10	2.8 x 13.2 x 13	14	1M/2M	Backlit supertwist	9.44 x 4	CGA/640 x 200	One 3.5-in. 1.44M byte	20M	DOS 3.3, GW Basic	Yes/Yes	3 hours	\$2,495	Carrying case, battery pack, 300, 1,200 bit/sec. internal modem
Leading Edge, Inc. (800) 874-3340	Model D/LT386SX	80386SX	16	3 x 13 x 14	13	1M/2M	Backlit supertwist	9 x 5.88	VGA/640 x 480	One 3.5-in. 1.44M	20M, 40M	DOS 3.0	No/Yes	1.5 hours	\$2,995 (20M), \$3,195 (40M)	Carrying case, 2,400 bit/sec. internal modem
Microslate, Inc. (203) 357-9901	Datellite 150S	NEC V40	8.129	2.63 x 10 x 12.63	7 (with two batteries)	768K/8M with optional RAM card	Backlit supertwist with touchscreen	4 x 9	CGA/640 x 200 (LCD), 2048 x 2048 (touchscreen)	One 3.5-in. 1.44M byte, or RAM disk up to 8M bytes	Optional 40M to 120M external 40M to 1.2G	Digital Research Inc.'s DOS on ROM, Touchscreen software	Yes/Yes	5 hours	\$3,295	Carrying case, bar-code reader, cigarette lighter adapter, battery pack, fast charger, infrared keyboard, RAM card, smart card, fax modem
	Datellite 300L	80386	16	12.63 x 10 x 2.63	7.28 (two batteries)	4M/4M	Backlit supertwist with touchscreen	6 x 9	CGA, VGA, EGA/640 x 480	One 3.5-in. 1.44M byte, or RAM disk up to 8M bytes	Optional 40M to 120M, external 40M to 1.2G	Digital Research Inc.'s DOS on ROM, DOS (optional), touchscreen software	Yes/Yes	5 hours	\$6,950	Carrying case, bar-code reader, cigarette lighter adapter, battery pack, fast charger, infrared keyboard, RAM card, Smart card, fax modem
NEC Technologies, Inc. (800) 826-2255 (708) 860-9500	Ultralite	NEC V30	9.83	1.4 x 8.3 x 11.75	4.4	640K/1M	Backlit supertwist	8.5 x 4.5	CGA/640 x 200	One optional external 3.5-in. 1.44M byte	1M/2M	DOS 3.3, Traveling Software's Laplink	No/No	2 hours	\$2,499	Carrying case, parallel port
Ogivar Technologies (800) 361-3694	Interport	80386SX	20, and 4 for power down operations	1.5 x 11 x 10	12.2	640K with 384K shadow RAM/4M	Backlit supertwist	10-in. diagonal	CGA, EGA, VGA/640 x 480	One 3.5-in. 1.44M	44M formatted/100M	DOS 4.01, Windows 3.0	Yes/Yes	3 hours	NP	Carrying case, cigarette lighter adapter, 1200, 2,400 bit/sec. internal modem, includes docking station
Olivetti Systems & Networks (416) 477-8250	M316	80386SX	16	3.96 x 13.2 x 14.4	14	1M/5M	Backlit supertwist	8.5 x 6.5	VGA/640 x 480	One 3.5-in. 1.44M byte	20M, 40M/100M	Nicot Development's Paraneet Turbo transfer software	Yes/Yes	2 hours	\$7,799 (Canadian)	Carrying case, battery pack, 2,400 bit/sec. internal modem
	M111	NEC V30	16	3.96 x 13.2 x 14.4	14	1M/5M	Backlit supertwist	8.5 x 6.5	CGA/640 x 400	One 3.5-in. 1.44M byte	20M, 40M/100M	Paraneet Turbo	Yes/Yes	3 hours	\$2,699 (Canadian)	See above
	M211	80C286	16	3.96 x 13.2 x 14.4	14	1M/5M	Backlit supertwist	8.5 x 6.5	EGA/640 x 350	One 3.5-in. 1.44M byte	20M, 40M/100M	Paraneet Turbo	Yes/Yes	2.5 hours	\$5,499 (Canadian)	See above
	M211V	80286	16	3.96 x 13.2 x 14.4	14	1M/5M	Backlit supertwist	8.5 x 6.5	VGA/640 x 480	One 3.5-in. 1.44M byte	20M, 40M/100M	Paraneet Turbo	Yes/Yes	2 hours	\$6,699 (Canadian)	See above
Outbound Systems, Inc. (800) 444-4607	Outbound Laptop	Motorola HC000	15	12.3 x 7.8 x 3.6	9.3	1M/4M	Backlit double supertwist	8.5 x 5.25	Macintosh black and white/640 x 400	One 3.5-in. 1.4M byte	40M/1M-16M RAM disk	Macintosh 6.04, Outbound system software	No/No	3 hours	\$2,999 (FDD model), \$3,999 (HDD model)	Carrying case
Panasonic Communications & Systems Co., Office Automation Group (201) 348-7000, (800) 742-8086	CF-150BPKG Business Partner	NEC V20	8	2.4 x 12.2 x 9.8	7	640K/1.6M	Backlit supertwist	4.6 x 7.6	CGA/640 x 200	One 3.5 720K bytes	Optional 1M EMS RAM	DOS 3.3, GW Basic	No/No	1 hour with backlit on, 4 hours with backlit off	\$1,149	Carrying case is standard, 2,400 bit/sec. internal modem
Paravant Computer Systems, Inc. (A UES Co.) (407) 727-3672	RLT-88	NEC V40	6	14 x 7.5 x 3	12.5	640K/640K	Backlit supertwist	4 x 9	CGA-compatible/200 x 640	Four IC card slots	None	DOS 3.21	No/No	6-8 hours	\$6,995	Carrying case, battery pack
Sanyo Business Systems Corp. (800) 524-0047 x320	MBC 16LT2	80C88	4.77 or 8	2.44 x 12.63 x 11.38	7.88	640K/640K	Detachable supertwist, optional backlit	9-in. diagonal	CGA, monochrome/640 x 200, 320 x 200	Two 3.5-in. 720K bytes	None/40M	DOS 3.2, GW Basic	No/Yes	6 hours	\$1,269	Carrying case, 1,200, 2,400 bit/sec. internal modem
Sharp Electronics Corp. (201) 529-9500	PC-6220	80C286	12	8.5 x 11 x 1.4	4	1M/3M	Backlit supertwist	10-in. diagonal	VGA, 286 VGA/640 x 480	Optional 3.5-in. 1.44M byte	20M	DOS 4.01, Traveling Software's Laplink, ROM	Proprietary keyboard only/Yes	2-5 hours (With extra battery)	\$3,995	Carrying case, battery pack, internal modem
Tandy Corp. (817) 390-3011	Tandy 1100 FD Model 25-3530	NEC V20	8	2.3 x 12.1 x 9.8	6.4	640K/640K	Supertwist	7.75 x 4.81	CGA/640 x 200	One 3.5-in. 720K bytes	None	DOS 3.3, Tandy Deskmate personal productivity software	No/No	5 hours	\$999	Carrying case, battery pack, 2,400 bit/sec. internal modem
	Tandy 102 Model 26-3803	80C85	2.4	1.5 x 11.8 x 8.5	3	32K/32K	LCD	7.6 x 2.1	CGA-compatible Monochrome/240 x 64	None	None	Proprietary operating system, management software	No/No	20 hours	\$599	Carrying case, bar-code reader, acoustic coupler, external disk drive, computer cassette recorder



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PRODUCT SPOTLIGHT

VENDOR	PRODUCT NAME	CPU TYPE	CLOCK SPEED (MHZ)	DIMENSIONS (INCHES)	WEIGHT WITH BATTERY (POUNDS)	RAM STANDARD/MAXIMUM (BYTES)	DISPLAY TYPE	SCREEN DIMENSIONS (L x H)	SCREEN TYPE/SCREEN RESOLUTION (PIXELS)	FLOPPY DISK SIZE (BYTES)	HARD DISK DRIVES: STANDARD/MAXIMUM	SOFTWARE BUNDLED	PLUGS INTO A FULL-SIZE KEYBOARD/MONITOR	BATTERY LIFE	BASE PRICE W/ BATTERY	OPTIONS
Tandy Corp. (817) 390-3011	Tandy 1400 FD, 1400 HD	NEC V20	4.77 or 8	3.5 x 12.5 x 14.5	11.5, 13	768K/768K	Backlit supertwist	22.5 x 10	CGA/640 x 200	Two 3.5-in. 720K bytes, one 3.5-in. 720K bytes	Optional 20M	DOS 3.3	Yes/Yes	4 hours	\$1,499 to \$2,499	Carrying case, battery pack, 1,200, 2,400 bit/sec. internal modem
	Tandy 2800 HD	80C286	6 or 12	3.3 x 12.25 x 13.75	12.5	1M/2M	Electroluminescent	9.1 x 8.6	EGA/640 x 400	One 3.5-in. 1.44M byte	20M	DOS 3.3, Tandy Deskmate	Yes/Yes	2 hours	\$3,499	Carrying case, battery pack, RAM upgrade, 2,400 bit/sec. internal modem
Texas Instruments, Inc. (800) 527-3500	Travelmate LT286 Model 12	80286	6 or 12	3.2 x 11.7 x 8.2	6.7	1M/4M	Backlit supertwist	9 x 4.25	CGA/640 x 200	One optional 3.5-in. 1.44M byte	20M	DOS 3.3, Traveling Software's Laplink transfer software	No/Yes	3 hours	\$4,199	Carrying case, battery pack, cigarette lighter adapter, 2,400 bit/sec. internal modem
	Travelmate LT286 Model 25/45	80L286	6, 8 or 12	3.3 x 12.1 x 14.3	14	640K/3.6M	Backlit double supertwist	8 x 6	VGA/640 x 480	One 3.5-in. 1.44M byte	20M (Model 25), 40M (Model 45)	DOS 3.3, GW Basic 3.2	Yes/Yes	3 hours	\$4,599 (Model 25), \$4,999 (Model 45)	Carrying case, cigarette lighter adapter, battery pack
Toshiba America Information Systems, Inc., Computer Systems Div. (800) 334-3445	T1000	80C88	4.77	2.05 x 12.2 x 11	6.4	512K/1.2M	Supertwist	9.6 x 3	CGA/640 x 200	One 3.5-in. 720K bytes, optional external 5.25-in.	None	DOS 2.11 in ROM, Multisoft, Inc.'s PC-Kwik Power Pak	No/Yes	5 hours	\$999	Carrying case, cigarette lighter adapter, battery pack, 768K memory card, Toshiba Laplink Plus, 1,200, 2,400 bit/sec. internal modem
	T1000SE	80C86	9.54	1.78 x 12.2 x 10	5.9	1M/3M	Backlit supertwist	9-in. diagonal	CGA/640 x 400	One 3.5-in. 1.44M byte, optional external 5.25-in. 360K bytes	None	DOS 3.3 in ROM, PC-Kwik Power Pak, Hypertext on-line documentation	No/No	2 hours	\$1,699	Carrying case, cigarette lighter adapter, battery pack, 1M and 2M memory card, battery pack recharger, Toshiba Laplink Plus, 2,400 bit/sec. internal modem
	T1000XE	80C86	9.54	1.8 x 12.2 x 10	6.2	1M/3M	Backlit supertwist	9-in. diagonal	CGA/640 x 400	Optional external 3.5-in., 5.25-in. 360K bytes	20M	DOS 3.3 in ROM, PC-Kwik Power Pak, Hypertext on-line documentation, Toshiba's Laplink file-transfer software	No/No	2 hours	\$2,699	Carrying case, cigarette lighter adapter, battery pack, 1M and 2M memory card, battery pack recharger, Toshiba Laplink Plus, 2,400 bit/sec. internal modem
	T1200HB	80C86	9.54	2.6 x 12.2 x 12	11.4	1M/2M	Backlit supertwist	9.6 x 5	CGA/640 x 200	One 3.5-in. 720K bytes, optional external 5.25-in. 360K bytes	20M	DOS 3.3, PC-Kwik Power Pak	No/Yes	2 hours	\$2,999	Carrying case, cigarette lighter adapter, 5-slot expansion chassis, expansion chassis interface card, battery pack recharger, Toshiba Laplink Plus, IBM EMS memory card, 2,400 bit/sec. internal modem
	T1200XE	80286, 80C286	12	2 x 12.2 x 11	7.9	1M/5M	Sidelit supertwist	7.75 x 4.88	CGA/640 x 400	One 3.5-in. 1.44M byte, optional external 5.25-in. 360K bytes	20M	DOS 4.01, PC-Kwik Power Pak, Hypertext on-line documentation	No/Yes	1.5-2.5 hours	\$3,999	Carrying case, cigarette lighter adapter, battery pack, 5.25 360K external drive, 2M memory card, battery pack recharger, Toshiba Laplink Plus, 2,400 bit/sec. internal modem
	T1600/20, T1600/40	80C286	6 or 12	3.2 x 12.2 x 12.5	11.9	1M/5M	Backlit supertwist	9 x 5.75	EGA/640 x 400	One 3.5-in. 1.44M byte, optional external 5.25-in. 360K bytes	20M, 40M	DOS 4.01, PC-Kwik Power Pak, Hypertext on-line documentation	No/Yes	1-1.5 hours	\$4,499 (T1600/20), \$4,999 (T1600/40)	Carrying case, cigarette lighter adapter, battery pack, 5-slot expansion chassis, battery pack recharger, Toshiba Laplink Plus, OS/2 operating system, 2,400 bit/sec. internal modem
	T3100SX	80386SX	16	3.15 x 12.2 x 14.2	13.5	1M/13M	High-resolution gas plasma	10-in. diagonal	EGA/640 x 480	One 3.5-in. 1.44M byte, optional external 5.25-in. 360K bytes	40M	DOS 4.01, PC-Kwik Power Pak, Hypertext on-line documentation, Quarterdeck Expanded Memory Manager-386	Yes/Yes	3 hours	\$5,999	See above
U.S. Micro Engineering Ltd. (303) 939-8700	Execumate	80286, 80386, 1486	20 (80286), 25, 33 (80386), 25 (1486)	3.5 x 14.5 x 16	12.2	1M/16M	Backlit supertwist, gas plasma, electroluminescent, color TFT flat panel	6 x 8	VGA/640 x 480	One 3.5-in. 360K or 1.44M, one 5.25-in. 360K or 1.2M	42M/310M	Optional DOS, OS/2, Pick, Unix, Xenix	Yes/Yes	1-2 hours	\$5,623, \$6,890, \$8,653, \$11,953	Carrying case, cigarette lighter adapter, battery pack, internal worm drive, expansion chassis, internal CD-ROM, 2,400, 9.6K bit/sec. internal modem
Veridata Research, Inc. (818) 303-0613	Turbolite TL-110	80C88	4.77 or 9.54	1.94 x 12.2 x 11	6.8	640K/1M	Backlit supertwist, electroluminescent	9.13 x 4.17	CGA/640 x 200	One 3.5-in. 1.44M byte, optional external 5.25-in. 1.2M byte	None/20M	Digital Research DR-DOS 3.41	Yes/Yes	2 hours	\$1,299	Carrying case, external 5.25-in. floppy disk drive
	Turbolite TL-111	80C88	4.77 or 9.54	1.94 x 12.2 x 11	6.8	640K/1M	Backlit supertwist, electroluminescent	9.13 x 4.17	CGA/640 x 200	Optional external 5.25-in. 1.2M byte	20M	Digital Research DR-DOS 3.41, Traveling Software's Laplink	Yes/Yes	2 hours	\$2,299	Carrying case
Zenith Data Systems (800) 553-0331	Minisport	80C88	4.77 or 8	1.3 x 12.4 x 9.8	5.9	1M (Model 1), 2M (Model 2)/2M	Backlit transfective with a proprietary mode	8.38 x 3.25	CGA/640 x 200	One 2-in. 720K bytes, optional external 3.5-in. and 5.25-in.	360K silicon disk (Model 1), 1.36M silicon disk (Model 2)	DOS 4.0, Rupp Corp.'s Fastlynx LX data transfer software	No/Yes	3 hours	\$1,999 (Model 1), \$2,799 (Model 2)	Carrying case, battery pack, 1,200 bit/sec. internal modem

'Have I got a system for you!'

Tough climate will make sales and marketing systems hot in the '90s

BY VAN MAYROS

Prediction: Within the next year or so, you will be involved in working on a marketing information system for your organization. If you are already working on one, expect to become more involved in helping marketing and sales personnel take charge of their own information.

Tougher competitive pressures, improving open systems technology and rising demand for up-to-the-minute sales and marketing information guarantee that marketing information systems will be hot in the 1990s.

Simply defined, a marketing information system is an organized set of data that is managed using multiple origination points, entries and outputs. Used wisely, it can help improve revenue, market opportunities, positioning and customer support.

Take, for example, the case of a Fortune 500 manufacturing company. The turnover rate of its large field sales force was translating into sales declines in most of the U.S. and Europe. So the firm attacked the problem by equipping its 7,000-member sales force with sales automation tools, including customer intelligence input screens, input procedures and on-screen custom-reporting capabilities.

The upshot? The return on its \$35.7 million investment in the sales systems was pegged at \$325.4 million, measured in increased revenue per territory.

In the late 1980s, a few consultancies started applying a systems approach to orga-

Mayros is president of Infomarketing, a Florida consultancy specializing in the design of marketing systems. He is the author of six books on marketing information systems and principal U.S. speaker for Frost & Sullivan International.

nizing marketing information. By emphasizing specific information needs first, applications second and the computer itself last, marketing and sales managers found that computers could help generate revenue instead of just counting it. Suddenly, marketing and sales managers were examining their computer environments very closely.

The reason for the appeal is simple: Marketing and sales managers face a daily barrage of questions and problems requiring them to make decisions about the company's product, customers, sales force and markets.

The marketing system of the early 1990s will focus on helping marketing and sales managers execute simple to complex applications on relational systems that range from microcomputers (Microsoft Corp./Sybase, Inc.'s SQL Server) to minicomputers (Digital Equipment Corp.'s RDB, Oracle Systems Corp.'s Oracle) to mainframes (IBM's DB2 and SQL/DS), to name a few. Many companies, such as Information Builders, Inc., IBM and Micro Data Base Systems, Inc. are also integrating expert systems technologies within their database systems.

The next generation of marketing systems will integrate external information and intelligence with internal financial, production, sales and customer trends. The end product will be an electronic executive briefing system that details trends and projections in markets, customer segments, competitors, industries, technologies and so on.

This decade's marketing systems will also have technical capabilities far beyond what was once considered possible in the 1980s. Specifically, they will provide the following:

- Ease of use.
- Ease of access.
- Transparent integration.
- Powerful analytical/statistical routines.
- Strong external integration.
- Field integration.
- Exceptional presentation tools.
- Ability to generate revenue.
- Customer support.
- Strategic planning support.

The first role of the marketing information system will be to provide decision support for the organization. To apply systems technology effectively to such a system, you must be able to apply a logic to the framework of your organization's vital questions about sales, products, customers and markets (see story page 102).

In the past, most marketing departments



Robert Pizzo

To answer these questions or solve these problems, managers and executives rely on experience and intuition to give them a general "feel" for what the solution should be.

Increasingly, however, the 1990s will see managers and executives make effective decisions only after they have studied information related to the problem or question.

Over the next two years, users of marketing information systems will have options that were only dreamed of a few years ago.

- Track products, customers, markets
- Integrate internal, external information
- Payoffs: More sales, higher revenue

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Report from the field: Toss out the scissors

BY ALAN J. RYAN
CW STAFF

The days of finding a Ciba-Geigy marketing executive sitting on the floor, scissors in hand, clipping articles about competitors out of newspapers and cutting up marketing reports have pretty much gone the way of the cork-topped medicine bottle.

Similarly, Converse, Inc. field sales representatives no longer look to phone booths as the lifeline to their company's North Reading, Mass., headquarters.

Both companies have provided their sales forces with sales automation tools and are looking at new ways to give their field salespeople marketing and competitor information while they are on the road.

Ciba-Geigy Corp., a chemical and pharmaceuticals company, began considering a relational database for marketing information in 1986. Because the company has an information systems group dedicated to marketing, "we embarked on a strategy to build a strategic database for the whole department," says Jack Feeley, director of marketing services at Ciba-Geigy's pharmaceuticals division in Summit, N.J. The marketing information system was designed to analyze sales, Feeley explains.

However, he says, it became clear that the historical sales information and other sales data could also be useful to the sales force. By late 1988, the hardware was in place and pieces of the marketing system were being used at Ciba-Geigy, Feeley says.

The key to implementing any type of field sales or marketing system is how the project is approached. Feeley and Peter Durkee, senior systems analyst at athletic-shoe manufacturer Converse, advise other companies planning to im-

plement these types of systems to start slowly, set realistic goals, create prototype systems and work with users.

What sets the stage for such projects varies widely from firm to firm.

In Ciba-Geigy's case, the impetus for the system came from seeing executives using the scissors method.

Timing and location were key factors in Converse's early entry into automat-

jump on the cutting edge of a technology that was relatively new, he explains.

Before starting the automation pilot program at Converse, Durkee traveled around the country to the company's regional offices and met with the regional sales managers to discuss the problems they had with the information systems that were in place at the time — namely, telephones.



Seth Resnick

Converse's Durkee: Executive backing opened many doors

ing its sales force. As the story goes, the sports equipment firm's former chairman was on a plane in late 1986 when the passenger seated next to him pulled a laptop computer out of a case and starting working. The high-altitude, battery-operated office so impressed the chairman that he expressed his interest in exploring laptop technology to other company officials.

For Durkee, this executive backing was an opportunity and a challenge to

Initial approaches to ease the communications problems at the remote sites had included overnight mail and setting up printers in the regional offices, where reports and other information could be sent. For many of the reps, however, traveling to regional offices was a long commute, and long-distance phone calls were expensive.

Furthermore, the reps often needed information daily, Durkee says. "Dealing in a consumer market that requires

changes that come on a moment's notice or daily basis — like reacting to a competitor's marketing ploy or trying to promote a program you put together yourself — can be a problem even if you use overnight mail. It is fast and efficient, but it is also expensive," Durkee explains.

It was obvious a new approach was needed, and sales force automation using laptops was the logical choice.

To discover what kind of information the sales reps needed, Durkee went on the road with a couple of them and called on their customers. By doing so, he was able to listen to their approach to selling and hear the questions the customers asked. For example, a customer might ask about the availability of a specific type of athletic shoe. Their access to the home office's inventory information was only through the phone line, so a sales rep would often tell the customer he would call with the information the following day.

With the sales force automation project in place, Converse sales reps can now download real-time, on-line inventory information before making a sales call and have that information handy so the questions can be answered on the spot.

The Converse sales force automation project began in earnest in the spring of 1987 and was rolled out to more than 90 sales reps by the end of 1988.

At Ciba-Geigy, Feeley says the marketing system hasn't met any resistance to date. Today, the firm is looking to integrate the marketing information project with a field sales force project. "But with personnel turnover, not everyone is always using it as well as it can be used. It is a matter of us getting back out and showing people what the capabilities are and how to use it," he says. •

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Continued from page 97

have had to rely on other groups in the company for their information. For example, the accounting department is typically responsible for the periodic reporting of sales activity, and the production department generally reports product inventory status.

Many large Fortune 500 organizations do not approach marketing systems as a way to change the functional reporting responsibilities of these marketing support departments. Rather, the goal is to expand the marketing department's role in generating all marketing-related information.

In the basic marketing information system, information is provided to marketing personnel — perhaps randomly and sporadically — by other departments and people outside the organization. Unfortunately, this kind of system is still the most prevalent. It is usually developed by an information systems group that fits the requirements around the marketing information supplied to the computer

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by other departments.

The following are 10 key marketing information system trends at the Fortune 500 level that support companies developing a marketing decision support architecture:

- The scope of corporate marketing information systems is being extended to handle less structured information, such as external on-line databases, text, graphics and images.
- Computer-held sources of information — a sales representative's laptop, for instance — that

vices and customer services.

- Corporations are dramatically increasing computing resources support for marketing, sales and planning groups and departments.
- External workstations are being established to capture direct customer transactional data, service data and opportunity intelligence.
- Corporate infrastructures are reflecting the underlying needs of the organization, such as strategic planning, marketing objectives and sales objectives.

Make you or break you

BY STEFANIE MCCANN
CW STAFF

Can computer systems really increase sales and enhance customer support for marketing and sales departments? Some analysts say that automation can make or break a company's sales efforts.

According to The Conference Board, a New York-based consortium of businesses, one out of two marketing and sales plans fails when marketing information systems are not used. In comparison, one in five fails when marketing information systems are used.

The following are examples of failed marketing strategies in companies that were unable to gather all the necessary demographics because they did not use broad-based marketing information systems:

- A cake maker introduced cake mix in Japan without considering that only 3% of the households owned conventional ovens.
 - An electric shaver manufacturer ushered in shavers to Japan but missed data that Japanese hands are too small to handle large American shavers.
 - When General Motors Corp. presented the Nova to Latin America, it would have been helpful for them to know that "no va" means "it doesn't go" in Spanish.
- The successes are just as spectacular:
- Colgate-Palmolive Co. reports that its sales workstations improved shelf coverage by 30% in the first year of implementing marketing information systems.
 - Xerox Corp. was able to cut \$5 million off its marketing overhead budget while increasing productivity from 10% to 20%.
 - *Vanity Fair* cut its magazine ordering cycle from two weeks to three days and increased sales by 10% using laptops that access its marketing information systems database.
 - Aratex Services, Inc., a large uniform supply firm, uses an early prospect system that increased its number of daily calls from 40 to 60.

interface directly with marketing department managers and analysts will continue to increase in importance.

- Top executives are relying on external information and intelligence as opposed to internal data.
- Key managers and analysts must rely on both internal and external information and intelligence. However, data manipulation is still oriented toward the counting of sales.
- Administrative support managers still rely on internal data.
- Decision support groups are providing a wider range of productivity results, ad hoc application services and external information access.
- Systems, especially marketing ones, are being developed and supported in separate decentralized departments, such as product marketing, strategic ser-

If information systems are the nervous system of the organization, then the marketing decision support architecture is the circulatory infrastructure that underpins those systems. The marketing information and intelligence decision-center workstation will become the heart of the entire system. Workstations already contribute, and there can be little doubt that their contribution will increase in the future as technology continues to improve.

Data remix

As well as re-examining the methods used to store data, IS can create new techniques for retrieving and manipulating data. These techniques must reflect the tasks and skills of managers, especially executives, as well as the circumstances under which they work.

Existing IS files are part of the problem. Even when these files have been enhanced to meet the new demands placed on them, they form only part of a satisfactory solution.

Existing data files generally have serious shortcomings when measured against end-user requirements for information. For many companies, these shortcomings include the following problems:

Costly and cumbersome files. Data files may be expensive and time-consuming to modify. They may not provide the time-lapse data on which many decisions are based. They may not be flexible enough to reflect the fact that the same data, used for different purposes, may be assigned different values. For example, a "sale" may be recorded in several different departments or levels of the organization. Revenue may be reported differently to accounting and sales/marketing.

Inconsistent files. The files may be divided along the wrong dimensions for decision-making purposes; for example, by topic rather than in terms of business processes.

Database technologies, such as IBM's DIS, Novell, Inc.'s Netware SQL, Micro Data Base's Knowledgeman/2, Information Builders' PC Focus, DB2 and more, are all based on relational models that promise to address some of these shortcomings.

Information management

The IS department's goal is to give end users access to the information they need to do their jobs — information that is reliable, relevant, complete and easily available in a timely manner.

To achieve this end, companies will have to restructure existing data files and then link those files to tools on end users' workstations.

Those tools must enable users to find the data they want from restructured files and associate it as needed with data from other sources — perhaps keyed in from correspondence or retrieved from electronic external data files or files of document images held within the department.

Managerial and executive needs can be met as they arise by developing special-purpose extract programs to transfer subsets of the customer master file down to the marketing decision-center subsystems, or by providing "fill-in-the-form" interfaces through which managers can obtain predetermined pieces of data.

The job of transferring data obtained from central files into personal computer packages by terminal emulation can also be simplified.

British firm ICI, for example, has produced an interface routine called Conductor, which resides in an IBM PC. It can emulate IBM, DEC and videotext

What makes marketing systems different?

A systems approach to organizing marketing and sales information is dramatically different from that of systems used for other business disciplines, such as accounting or payroll. Most business systems handle transactions between parties and deal largely with routine day-to-day operations within a particular functional area. Furthermore, other systems are usually not unique to a given organization.

A payroll system, for example, may be similar in Company A and Company B. Both companies must withhold income taxes from their employees. Both produce the same standard reports detailing who got paid what and when.

Although marketing systems from one organization to the next do share some common ground, and although standard detailed sales reports may be similar from Company A to Company B, the applications for specialized information reporting may be radically different. These differences are brought about by the very nature of the marketing discipline itself and the answers it requires of IS. The relationships of marketing information systems to the major departments within a company represent the process of internal information exchange (see chart below). Note that the arrows flow both to and from the core of the marketing information system.

Marketing information also comes from sources external to the organization. To answer key marketing questions and develop strategic plans, management must be aware of what is occurring outside the relationships that take place among the functional areas within the organization.

As with internal sources, the arrows flow both to and from the marketing information system. The marketing information system requires information that will provide additional insight to enable the user to use external sources for greater strategic applications.

The principal user of a marketing information system, the marketing manager, is the major decision-maker and the person with whom the responsibility for effective marketing decision-making and planning lies.

By using the statistical models, screens and reports provided by the marketing information system, the manager makes policies and recommendations based on a defined process. He is not a "guesstimator" making rash decisions; rather, he is truly an active manager of his department's actions.

VAN MAYROS

Feeding the system

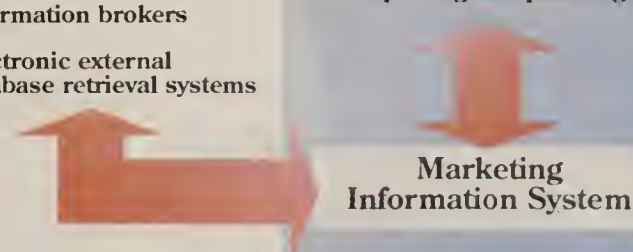
Marketing information systems consolidate many sources of internal and external information

Outside information

- Associations
- Industry reports/studies
- Field intelligence
- Secondary research
- Competition
- Meetings and conferences
- Distributors, wholesalers and retailers
- Customers
- State/local statistical data and abstracts
- Federal statistical data and abstracts
- Information brokers
- Electronic external database retrieval systems

Inside information

- Corporate planning
- Sales force
- Sales-order processing
- General marketing
- Engineering
- Customer/product service
- Product research and development
- Data processing
- Manufacturing
- Personnel
- Corporate financial reporting and planning



CW Chart: John York

terminals and includes a template program that reformat the screen obtained from any of those sources into the format expected by Lotus Development Corp.'s 1-2-3 spreadsheet.

Corporate marketing and sales managers rely on informal methods of communication, such as face-to-face meetings and the telephone. In the excitement of discovering the new options for formal communication that information technology opens up, it is easy to lose sight of this.

So far, information technology support for informal business communication is in its infancy. Among current methods available are the following:

• **Computer conferencing.** This approach enables a large number of managers to establish a meeting of minds over

an extended period of time. The system keeps a full record of all manager contributions, indexed by topic, to which participants can refer at any time.

• **Voice mail.** This electronic-messaging system uses dictated voice rather than keyboard-entered text.

• **Videoconferencing.** This method is a substitute for face-to-face meetings. There is a growing number of options and levels of sophistication available, including full-motion or the much cheaper freeze-frame as well as the ability to integrate foreground or background visuals with the video image.

There is still much to learn about the application of such technologies. They stand apart from the family of technologies supporting formal communications

and the established IS systems, which means that their influence on the infrastructure is peripheral.

It's interesting to see dozens of Fortune 500 firms and foreign multinational firms that generally don't try to justify expenditures on redesigning their information infrastructure. They realize that to hold their own in an increasingly competitive world, they need the best information and intelligence they can afford.

Thus, business organizations, whether engaged in a competitive battle or in a competition to provide the best possible service at the lowest possible cost, need to build the best marketing decision support infrastructure they can afford for the marketing information system. It may be a matter of survival. •

Basic questions

Sales and marketing managers want their information systems to provide answers to the following questions:

• About the sales force

- 1) Who are the best and worst performers and why?
- 2) What attributes are associated with these performers?
- 3) How many sales representatives do we need?
- 4) How many sales calls per market segment should we make?
- 5) What is the optimal compensation plan to reward good sales performance as well as maximize corporate objectives?
- 6) How are we affected by lost sales representatives?
- 7) In which territories can we expect the greatest sales improvements and why?

• About products

- 1) How well are each of our products doing?
- 2) What is the sales history of each product?
- 3) What is the life cycle of each product?
- 4) What is the actual and intended return on investment of each product?
- 5) What are the key determinants that make a good seller?
- 6) What is the competition doing with similar products today and tomorrow?
- 7) Do we have the right products matched to the right markets?
- 8) Where are the potential sales improvements by product line?

• About customers

- 1) Who are our best and worst customers?
- 2) How many customers have we lost and why?
- 3) Why did they become dissatisfied?
- 4) How and why have we gained new customers?
- 5) Who are our potential customers?
- 6) How can we reach them?
- 7) Where are the potential sales improvements by customer?

• About the market

- 1) Who are our strongest rivals?
- 2) What are their strengths and weaknesses?
- 3) What are their marketing strategies?
- 4) What resources do they have at their disposal?
- 5) Which market segment(s) should we target?
- 6) Where are our new markets located?
- 7) Where are we making or losing profits?
- 8) Where are the potential sales improvements by market?

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COMPUTER INDUSTRY

NATIONAL BRIEFS

Getting closer all the time

Among IBM moves ever-closer to the customer is the company's realignment early this month of its Professional Services field organization. Each of the approximately 2,000 members of the corps now reports to the area general manager of vertically targeted industry development groups served, rather than to the centrally located vice-president of professional services.

A small centralized headquarters group remains, however, "to ensure national growth and quality control," according to IBM Vice-President Gail Fitzgerald.

Double the dollars

In its first quarterly statement as a public company, Cisco Systems, Inc. announced that its third-quarter net income more than doubled the total income for the corresponding period in 1989. The Menlo Park, Calif.-based bridge and router manufacturer brought in net profits of \$3.8 million during the period ending April 29 on revenue of \$17.9 million, up from \$7.7 million in last year's third quarter.

More briefs on page 107

Warning: Proceed with caution

Bleak U.S. economy puts the computer industry in danger of a recession, analysts say

BY MITCH BETTS
CW STAFF

There was a time — call it the good old days — when the computer industry could virtually ignore what was happening in the general economy. Who cared about such pesky things as "leading economic indicators" when corporate America was gobbling up computers in the 1970s and early 1980s?

But now, with the industry maturing and corporate America saturated with computers, the industry's fate seems inextricably linked to the ups and downs of the U.S. and global economies.

Grimly illustrating this linkage, the federal government's 1990 *U.S. Industrial Outlook* carried the following bleak assessment for the hardware segment of the industry: "Given the continuing slowdown projected for the U.S. economy in 1990, the U.S. computer equipment industry should experience another year of low growth in domestic demand." It predicted that the value of hardware shipments will increase 4.3% in 1990.

"The computer industry has become a more cyclical industry over the last five years," explained Larry Salzman, president of BDA Associates, Inc., an economic consulting firm in Eastchester, N.Y. One reason is the saturation of the corporate market, with new orders coming only from upgrades, new applications or corporate expansion. The problem is "they're postponable decisions" during economic downturns, Salzman said.

That helps to explain why a recent Ernst & Young survey of chief executives at 774 computer and electronics

companies revealed that their No. 1 economic concern is the prospect of a recession. During a recession, corporate spending plans get slashed.

Economists continue to describe

planning at Unisys Corp. "Automating back-room functions was so productive and such a cost-saver that [industry growth] continued regardless of trends in the economy," he said.

Now, however, the computer industry is driven by the applications that allow firms to harness information as a strategic business asset. Thus, the level of computer sales is directly tied to

1991 Outlook

Business economists are showing some optimism about the U.S. economy in 1991, as shown by consensus figures drawn from 65 professional forecasters

Real economic growth (GNP): 2.5%

Corporate profits: up 9%

Inflation rate: 4%

Interest rates (3-mo. Treasury bills): 4%

Source: National Association of Business Economists

the current economy as sluggish, and yet they do not foresee a recession anytime soon. In a survey of 65 private forecasters, the National Association of Business Economists found a consensus that the country will continue to avoid an outright recession. At the same time, the forecasters said the risk of a recession is creeping upward.

"Thus, even though the best guess is no recession in either the next 12 months or even as far ahead as three years, the economy is in a danger zone," the association reported.

The computer industry used to be much more resilient because of the "Tom Swift nature of computers," according to Everett M. Ehrlich, vice-president for economic and financial

Economic willies

Computer and electronics industry executives rated the following as the most serious economic concerns of their companies

Percent of respondents concerned
(Base: 774 industry CEOs)

- 1 Recession potential (43%)
- 2 Federal budget deficit (20%)
- 3 (Three-way tie)
 - Inflation (7%)
 - Appreciation of U.S. dollar (7%)
 - Depreciation of U.S. dollar (7%)
- 4 Tax reforms (4%)
- 5 U.S. debt (4%)

Source: Ernst & Young

CW Chart: John York

the business fortunes of the industries that use them, Ehrlich said. "The way to understand the computer industry is to understand what its customers are doing," he said. Ehrlich said he monitors the economic pressures in such computer-intensive sectors as financial services, manufacturing, retailing and airlines.

Continued on page 109

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Unisys shuffles executive deck

BY JEAN S. BOZMAN
CW STAFF

BLUE BELL, Pa. — Unisys Corp.'s reorganization of its computer and networking lines of business [CW, May 14] will stretch the abilities of two key executives, industry analysts said last week.

Cyril Yansouni and Reto Braun were both named as executive vice-presidents of the corporation — reporting to Chief Executive Officer James Unruh — following the resignation of Senior Executive Hollis Caswell, who ran Unisys' systems business since 1987.

Yansouni, 47, will head up the new

Computer Systems Product Group, which combines the products of the former \$1.5 billion Network Computing Group, based in San Jose, Calif., and the \$3 billion Computer Systems Group. Yansouni, a senior vice-president, formerly served as president of the Network Computing Group.

Braun, who is also a senior vice-president as well as president of the Pacific Asia Americas division, will manage U.S. information systems marketing.

Some analysts viewed the shuffle as a sign that the \$10.1 billion computer company is pressed for executive bench-strength.

"I take Caswell's departure as a major

loss for the company," said George Lindamood, industry service program director at Gartner Group, Inc. in Stamford, Conn. "He brought a certain discipline to an organization that badly needed it."

Others saw in the changes the first sign of Unruh's corporate direction. "Unruh is developing his own team," said John B. Jones Jr., an analyst at Montgomery Securities.

Unruh was named CEO in January, when former chairman W. Michael Blumenthal resigned [CW, Jan. 29].

Although Unruh, Yansouni and Braun now constitute the top management at



**Former Unisys
Senior Executive
Hollis Caswell**

Unisys, many details about lower levels of management have yet to be ironed out. However, the major moves have now been made, Yansouni said. Several analysts said they believe that the Unisys product line stands to benefit from the management changes.

"From a product standpoint, combining the divisions makes a lot of sense," Jones said. "Unisys is trying to inte-

grate its networking and computer products just the way Tandem did when it bought Ungermann-Bass."

Yansouni agreed. "We have to have a very comprehensive strategy," he said. "We can't approach problems in a disjointed fashion. We're already moving in a direction where a lot of the hardware and software used in Unisys systems will be common, even if different operating systems are used."

Yansouni was referring to an architectural separation between the Unisys 1100/2200 series, which is a continuation of the former Sperry Corp. mainframe line, and the Unisys A Series line, which is a continuation of the former Burroughs Corp. product line.

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Finding room at the top

As a senior Unisys Corp. executive, Hollis Caswell was probably in the running for chief executive officer, according to Gartner Group, Inc.'s George Lindamood. But when James Unruh, 48, was named CEO in January, Caswell may have felt displaced, Lindamood added. So it did not come as a surprise when Caswell, 58, began work last week as chairman and CEO of Hypres, Inc., an Elmsford, N.Y., semiconductor firm that works with superconducting materials.

"I've got an opportunity to run this company as CEO and chairman," Caswell said. "I've always wanted to run a company." Hypres, which has about 50 employees, has had Caswell serving on its board for five years. Before coming to Unisys in 1984, Caswell ran several business units at IBM, including the IBM semiconductor laboratory in East Fishkill, N.Y. The 26-year veteran of IBM focused on research and development as well as manufacturing while at Unisys.

Hypres is a \$5 million, privately financed start-up that currently makes products based on low-temperature superconductors. It plans to eventually make products based on new high-temperature superconducting materials. Hypres chips are bathed in liquid helium at temperatures of 450 degrees below zero Fahrenheit. They require 1,000 times less power than conventional semiconductors, Caswell said, and could be used in future computing and telecommunications applications.

JEAN S. BOZMAN

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NATIONAL BRIEFS

So there

Boca Raton, Fla.-based computer leasing company **Finalco Group, Inc.** — recently seen bidding to buy fallen leasing player **Continental Information Systems, Inc.** (CIS) out of Chapter 11 — is going home with at least a piece of the pie. Earlier this month, the Federal Bankruptcy Court approved an offer from Finalco and its affiliate **Gemini Equities, Inc.** to buy four European subsidiaries of a subsidiary of CIS that was not included in the CIS bankruptcy proceedings. The deal is expected to bring a lessee base with an aggregate portfolio worth approximately \$96 million into the Finalco coffers.

.....

Going for the goaled

Looking to leverage the largest sales force in the personal computer segment of the industry, **Oracle Systems Corp.** announced a preferred systems integrator sales program last week. The program will select about 60 preferred local-area network resellers who will receive leads from Oracle's direct and telephone sales forces. The resellers will then be able to follow up generated leads, according to Oracle.

"The constraints on our revenue have resulted largely from an inability to grow our sales force fast enough," said Tom Siebel, who is the general manager of Oracle's Direct Marketing Division. "This will expand our distribution capabilities significantly."

.....

Going public

AI Corp. announced last week that it has filed for an initial public offering of 1,500,000 shares expected to be priced from \$7 to \$9 per share. The Waltham, Mass.-based firm has decided to go public, buoyed not by the natural language technology in which it was a commercial pioneer, but by the success of its 2-year-old line of knowledge-based computer-aided software engineering products.

.....

Entering a new phase

Disaster recovery and investment support systems provider **Sungard Data Systems, Inc.** announced last week that it is on the verge of acquiring Waltham, Mass.-based **Phase 3 Systems, Inc.** in a stock swap expected to close by the end of July. Phase 3 President John Harkins and his three fellow co-founders will reportedly remain to manage the company, which offers investment support software and services, particularly to brokerage firms and commercial banks.

CSC Consulting tabs Crowley

BY CLINTON WILDER
CW STAFF

EL SEGUNDO, Calif. — After losing President Thomas Gerrity to the halls of academia, Computer Sciences Corp.'s CSC Consulting unit looked inside its own halls and earlier this month named Paul J. Crowley as Gerrity's replacement.

Crowley had been chairman of CSC Partners, Inc., a Waltham, Mass.-based systems integrator that he co-founded as Computer Partners in 1976. CSC acquired Computer Partners in 1986 and later made it part of CSC Consulting. CSC Partners posted \$65 million of CSC's \$1.5

billion revenue in the fiscal year ended March 30.

Gerrity left CSC last month to become dean of the Wharton School at the University of Pennsylvania [CW, April 9]. Like Crowley, Gerrity had founded and chaired one of the firms that makes up CSC Consulting — the Index Group, Inc., a Cambridge, Mass.-based consultancy that targets high-level information systems strategy.

Crowley said he will continue the CSC strategy of integrating multiple services ranging from strategic consulting to tech-



CSC Consulting's
Crowley

nical implementation. "Our clients are looking for a full range of services," he said. CSC will also continue its strategy of acquiring smaller firms to gain presence in new geographic areas and technologies, he added.

CSC split off its European operations from CSC Consulting, and European Chairman John Thompson will now report directly to CSC Chairman William R. Hoover. Crowley also reports to Hoover.

In addition, Index Chairman James A. Champy was given the title of senior vice-president of CSC Consulting, a newly created position.



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U.S. trade rep to focus on intellectual property at GATT

SAN FRANCISCO — Before meeting with trade representatives from Canada, Japan and Europe, U.S. Trade Representative Carla Hills said earlier this month that she would attempt to

protect intellectual property and discourage legislation that mandates local content and local ownership.

Hills, speaking to a group of business editors and writers,

said that the delegation with which she was about to meet would try to break deadlocks among the 97 member countries of the General Agreement on Tariffs and Trade (GATT) talks.

Still, disagreements remain. Hills spoke out against the 12-



nation European Community's plan to mandate local content and local ownership of firms by 1992, an initiative that she said "discourages further investment in the creation of new products."

She also said that she hoped the GATT talks would establish

rules for intellectual property, which is not currently covered by GATT rules but is "important to American entrepreneurs."

Hills also defended the decision she made late last month to exclude Japan from the list of "unfair traders." She added, however, that the U.S. would continue its pressure on Japan to open up its markets.

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INTERNATIONAL BRIEFS

Lucky 13

According to figures compiled by Japanese credit research firm **Teikoku Data Bank**, **IBM Japan Ltd.** ranked 13th on the list of Japan's leading corporate revenue generators of 1989. The IBM subsidiary's \$1.2 billion in sales for the year placed it in the company of such Japanese corporations as top-scorer Toyota Motor Corp., second-place entry Nippon Telegraph and Telephone Corp. and last year's lucky 13, now at number nine: Matsushita Electric Industrial Co.

If at first you don't succeed . . .

Try, try again, says the old saw, and AT&T is about to. The communications giant will rely on UK-based subsidiary **AT&T Istel** to aid it in breaking into the coveted European telecommunications market. This time, according to AT&T, its European overtures are informed by lessons learned from the company's ill-starred maiden effort, which ended in a messy divorce from Italian player **Ing. C. Olivetti & Co.**

Global Sparc-ing?

Unisys Corp. complemented last week's workstation rollout with a deal aimed at establishing itself as a scientific/technical workstation player in Europe, Africa and the Middle East. Under an agreement valued at approximately \$150 million over the next four years, Unisys will arrive in 67 countries' workstation markets reselling, under its own label, **Sun Microsystems, Inc.'s** Scalable Processor Architecture-based workstations made by Longmont, Colo.-based start-up **Solbourne Computer, Inc.**

Warning

CONTINUED FROM PAGE 103

A glance at those sectors is pretty disheartening, with layoffs on Wall Street, general weakness in the manufacturing sector and all too many retailers entering bankruptcy proceedings.

Despite the depressing headlines and a general squeeze on profits, however, corporations seem to be willing to invest in needed equipment. "We expect capital spending to continue to go up in 1990 — perhaps not as fast as in 1989, but at a fairly respectable pace," said Ken Militzer, chief economist at AT&T.

The U.S. Department of Commerce, in its latest survey of corporate spending plans, said companies plan to boost capital spending on new plants and equipment by 7.6% this year (after adjusting for inflation), a slight dip from last year's 8.6% gain but well above the 4.9% projected in last fall's survey.

Capital spending looks especially strong in the commercial services sector — an 11.3% increase this year, on top of last year's 10.8% increase, the survey indicated.

Economists, trying to explain these cross currents, speculated that even in a soft economy companies feel the need to invest in information systems and other types of modern business equipment in order to meet domestic and foreign competitive pressures, boost productivity and reduce labor costs.

That is why, even though the computer industry is now tied to regular economic cycles, it tends to fare a little better than other industries in a tight economic climate, Ehrlich said.

The Ernst & Young survey also showed that industry executives are worried about the federal budget deficit and appreciation of the dollar. For big companies with foreign sales, the stronger dollar bodes ill in that it makes their products less competitive in foreign markets.

EXECUTIVE CORNER

Patterson named Insite president

James L. Patterson, co-founder and former president of disk drive maker Quantum Corp., is the new president of San Jose, Calif.-based **Insite Peripherals**. According to Insite Chairman James Adkisson, Patterson — who most recently has served as a management consultant and member of the board of several technology companies — was brought on-board to guide the start-up in positioning itself at the forefront of the emerging superfloppy disk drive niche.

Boca Raton, Fla.-based networking products vendor **Atlantix Corp.** recently enlarged its board of directors to include former Electronic Data Systems Corp. Chief Financial Officer **Tom Walter** and also named Rabbit Software Corp. founder and former executive **Charles Robins** as president. Both were brought to Atlantix in an effort to manage the expansion anticipated in the wake of a major equity investment received in March from The Perot Group, an investment group headed by industry entrepreneur **H. Ross Perot**.

CEOs speak on competitiveness

WASHINGTON, D.C. — The blue-ribbon panel of computer company executives who last year joined forces as the Computer Systems Policy Project (CSPP) to lobby for policy recommendations on critical industry issues last week released the first fruit of their alliance: a set of recommendations aimed at strengthening the worldwide competitiveness of U.S.-based high technology.

The CSPP proposal is constructed on the twin foundations of access to foreign markets and more effective antidumping laws. Toward the former, CSPP suggested identifying the markets that would reap the greatest benefits from bilateral

market-opening; bilaterally negotiating a game plan for achieving that goal and completing it by a given date; monitoring the plan's progress; and backing government-applied sanctions if and where necessary.

Beef up antidumping laws

The executive consortium would also beef up antidumping laws that, according to CSPP member and Compaq Computer Corp. Chief Executive Officer Rod Canion, "should be effective remedies for injuriously unfair pricing, no more and no less," and "as our global market changes . . . must be adapted to meet the trade re-

alities of the 21st century."

"What we need and want are opportunities to compete," Hewlett-Packard Co. CEO John A. Young, a charter member of CSPP, said in a prepared statement.

"We believe that results can be achieved without resorting to managed trade," he stated.

In addition to Young and Canion, CSPP's roster of CEOs includes IBM's John Akers; Digital Equipment Corp.'s Kenneth Olsen; Unisys Corp.'s James Unruh; Sun Microsystems, Inc.'s Scott McNealy; Apple Computer, Inc.'s John Sculley; Control Data Corp.'s Lawrence Perlman; Cray Research, Inc.'s John Rollwagen; Tandem Computers, Inc.'s James Treybig; and NCR Corp.'s Charles Exley Jr.

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COMPUTER CAREERS

Part-time jobs are catching on

Insurers in competitive Hartford area leading IS toward job sharing

BY JANET RUHL
SPECIAL TO CW

A quiet revolution is taking place in the way that mainstream corporations treat information systems employees who want to work part-time. Only a few years ago, programmers found it difficult to get a part-time job. Many companies refused to let professionals work part-time schedules, and almost none of them offered benefits to people who worked fewer than four days per week. Part-time positions for managers were inconceivable.

Now the situation is changing dramatically — at least in Hartford, Conn., the nation's insurance capital. With its concentration of IS activity, the area often serves as a bellwether in information technology management.

The number of computer-related jobs as a portion of total positions in the Hartford area is about twice the national average, according to a state government report. Persistent shortages of experienced technical people and a growing awareness of the cost of losing experienced employees have led several firms to rewrite their policies on nontraditional work schedules.

Aetna Life and Casualty Co. is aggressively pursuing several

tactics, particularly job sharing. The company's goal is to retain experienced professionals, says Regina Stankaitis, a staffing consultant at the company.

Stankaitis estimates that 50 programmers currently share jobs, and the company has advertised for senior software programmers willing to work from 20 to 25 hours per week under such an arrangement.

Aetna prefers job sharing for part-time workers in the interest of maintaining full-time support for users, countering the most commonly heard objection to part-time programmers. Job-sharing employees who work 20 hours or more get full benefits, though vacation days are prorated according to the number of hours worked.

Aetna has also begun allowing some employees to work at home; they might work two days on-site and three days at home using a personal computer and modem. Stankaitis says the company expects to see productivity gains from this program.

The Travelers Corp. is also aggressively marketing the use of part-time workers to its managers. The Travelers program is open only to people who have worked at the company full-time,

but it is unique in that it applies to managers, including corporate officers and directors. Managers who are not on-site all week keep in touch with their teams using the company's voice mail and electronic mail.

The Travelers has been educating management in the use of part-time IS professionals in response to the changing demographics of the workforce, says Diane Bengston, assistant director of data processing human resources, who works at home one day per week.

The company's constantly growing need for experienced technical people is greater than the supply of available full-time workers. With the part-time option, The Travelers has been able to draw on the skills of many experienced professionals who had left the company to devote time to young families. The loyalty such workers bring in return for corporate flexibility is a major benefit of the approach, Bengston says.

Last year, The Travelers began offering full benefits to part-time employees who work at least 17½ hours per week.

Cigna Corp., which is based in Philadelphia and employs a large

number of programmers in Connecticut, is just beginning to experiment with part-time options. The company recently began a pilot program that lets full-time employees work from home two days per week or lets employees work part-time.

Cigna is pitching the program as an additional benefit to em-

ployees, says Jeff Rotatori, assistant director of corporate staffing services. However, management still has some reservations, Rotatori says. One is security risks stemming from a worker's ability to access large databases from home. Another is that users are resistant to part-time programmer support. The part-time option is at the pilot stage and limited to maintenance work. Part-timers get benefits if they work 20 or more hours per week.

worked at home for health reasons or other extenuating circumstances while on important assignments. E-mail has made these employees just another node on the network, Czaszcz says. In March, United Technologies began offering benefits to employees who work part-time.

The ability to offer part-time

THERE ARE INDICATIONS that the popularity of part-time IS work will catch on elsewhere.

Other companies not actively promoting part-time work are observing closely. United Technologies Corp.'s corporate IS group uses few part-timers, but company divisions are using a growing number of them, says David Czaszcz, director of the corporate IS group.

Czaszcz says he expects to see more part-timers because the company has had good experiences with people who have

work lets United Technologies keep people experienced with the company's applications and way of doing business, Czaszcz says. New hires, no matter how experienced, take at least six months to master the standards and procedures, he says. Security doesn't pose a major concern because the company offers part-time work only to former full-time employees who have passed extensive background checks.

There are indications that the popularity of part-time IS work will catch on elsewhere. Aetna offers its part-time options in other areas with a tight job market for IS professionals, Stankaitis says. These areas include upstate New York, Philadelphia, Texas and Los Angeles.

Ruhl is a consultant and programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals*.

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Programmer Senior wanted with knowledge of software interfaces to computer peripheral devices including data stream formats. Qualified candidates will possess a B.S. or M.S. in Computer Science or equivalent and 4-6 years of experience. Must have experience with VAX VMS and IBM MVS and be proficient with FORTRAN, C and Assembler. Workstation and PC experience is desirable.

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Seeking qualified individual to assist in the implementation of an MRP II system. The qualified candidate will possess a B.S. in Computer Science or equivalent and 3 to 5 years experience in management information systems. Knowledge of PC hardware and software as well as NOVELL LAN software is a must.

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Selected individual will act as the networking manager over large, complex and state-of-the-art data networks, consisting of DEC, Ethernet, IBM Token Ring, Hyperbus and Hyperchannel backbone system and Broadband. This individual must be knowledgeable of different network TOPOLOGIES, associated protocols, wiring requirements, hardware and software products. The individual must provide leadership in advanced monitoring and management techniques associated with large, complex data networks.

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What price used hardware?

Residual values guide in buying, selling and accounting for equipment

BY MICHAEL ERBSCHLOE
SPECIAL TO CW

When deciding to buy or lease computer equipment, it can be critical to know the future residual values of the hardware.

Knowing how much the computer equipment will be worth in a few years can also help organizations make key decisions about how to account for hardware assets and when to dispose of the equipment.

Residual value forecasts are simply long-term projections of the prices that computer hardware will fetch in the used equipment market. They generally reflect retail prices that dealers or brokers charge for used equipment — the prices the next user would pay.

Projecting residual values can get complicated. Values can drop drastically in the long run and vary dramatically in the short run. Even so, companies need accurate long-range projections of how much the equipment will be worth. Decisions about moving to a major system can come as much as 18 months before the actual acquisition, especially when it involves a new architectural direction.

In accounting decisions, predictions of residual values may convince managers to depreciate equipment more quickly on financial statements than on tax returns.

For tax purposes, companies generally assume a five-year life in depreciating systems. However, the resulting yearly values may be higher than true market values, a situation that many managers want their financial statements to reflect. They want to know where they stand on both fronts.

Residual value forecasts can help managers compare the economics of various lease options; they may base decisions in part on how much the equipment will be worth at the end of the lease period. One lease, for instance, may run for five years and carry no rights to the equipment upon completion. Another may run for a shorter term with higher payments but include the right to sublease the equipment.

Finally, residual values help managers determine the most economical way to dispose of equipment their company owns or leases.

It's important to keep in mind

that the retail values should be reduced to determine how much a sale will actually bring. Brokers will expect to make a commission; users buying directly will want to pay less than retail value because they're eliminating the broker. In addition, residual values generally don't include costs of refurbishing, freight, cabling and installation.



Over the long term, residual values tend to follow a fairly consistent route. Six to 12 months after a manufacturer begins delivering a technology, a few used pieces become available. At this point, used machines will fetch 80% to 90% of the manufacturer's list price.

Later in the product life cycle, more used systems will appear on the market as companies upgrade to larger versions, so residual values will fall. While they're still at least 50% of the list price, a manufacturer may try to keep them up as an incentive for buyers of new equipment.

They may, for example, quote an unrealistically high list price for an older model. That could keep its residual value high, because it's set as a percentage of

the list price, providing users with more incentive to sell the equipment and upgrade.

Several other factors affect residual values. One is the predictability of product announcements. In the past, IBM followed a reliable pattern of four-year cycles in introducing follow-on equipment. Today, IBM on average actively markets products for no more than two years.

Even though these product introduction cycles are predictable, their timing is still a major factor in determining short-term residual values. First, future products are apt to have even shorter lives. However, projections may not be accurate just because they reflect that trend. It's important to blend technology forecasting into the mix.

While some product life cycles are speeding up, others are slowing down as technologies are phased out or replaced. For example, vendors continue to introduce new magnetic tape products, but the pace has slowed as optical storage becomes more popular. It takes some daring to predict residual values in this kind of environment.

Another complicating factor is delays in product introductions that are caused by engineering or manufacturing problems. When these snafus arise, it means that residual values of the existing technology will stay higher than they normally would.

Manufacturing capacity is another factor. In the past, IBM was unable to respond very quickly to the demand for new products. These delays led to long lead times for orders, and some users opted for used equipment.

Today, IBM stockpiles equipment in advance of its introduction and can begin shipping in volume immediately upon announcement. The result is that the value of the earlier generation of products decreases more quickly.

The bottom line is this: Using residual values — let alone forecasting them — can get extremely complicated. The most critical thing to know is when they may be important to you. When they are, you will probably want to talk to your accounting people.

Erbschloe is executive editor at Computer Economics, Inc. in Carlsbad, Calif.

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The BoCoEx index on used computers

Closing prices report for the week ending May 11, 1990

	Closing price	Recent high	Recent low
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XT Model 086	\$500	\$700	\$350
XT Model 089	\$600	\$700	\$500
AT Model 099	\$1,150	\$1,375	\$700
AT Model 239	\$1,250	\$1,325	\$ 700
AT Model 339	\$1,370	\$1,400	\$1,000
PS/2 Model 50	\$2,060	\$2,200	\$2,000
PS/2 Model 60	\$2,060	\$2,200	\$2,000
Compaq Portable II	\$1,475	\$1,725	\$1,400
Portable III	\$2,300	\$2,500	\$1,900
Portable 286	\$1,700	\$2,000	\$1,700
Plus	\$750	\$950	\$675
Deskpro	\$825	\$900	\$800
Deskpro 286	\$1,400	\$1,625	\$1,300
Deskpro 386/16	\$2,500	\$2,750	\$2,475
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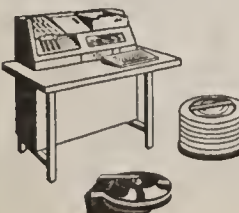
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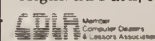
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Request for Proposal No. 1799, due Monday, June 4, 1990 at 3:30 p.m. for the acquisition of various hardware and software to provide remote access to an existing WANG VS-7310 for the DEPARTMENT OF HUMAN SERVICES.

Request for Proposal No. 1801, due Thursday, June 14, 1990 at 3:30 p.m. for the acquisition of a twinax connected dot matrix band printer to connect to an existing IBM System/38 for the MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY.

Request for Proposal No. 1802, due Thursday, June 14, 1990 at 3:30 p.m. for the acquisition of the equipment, software and services required to establish a local area network for the MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY.

Request for Proposal No. 1803, due Tuesday, June 5, 1990 at 3:30 p.m. for the acquisition of a local area network for EAST CENTRAL COMMUNITY COLLEGE.

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Analytical thinking for users

Giving users guidelines can help prevent ill-conceived applications

BY NAOMI KARTEN
SPECIAL TO CW

These days, personal computer users are developing increasingly complex applications. While many such applications are well-designed and competently developed, some are incorrect, invalid, illogical or inappropriate.

One reason that users end up developing faulty applications is that many lack experience in analyzing business problems from a computing perspective. Trainers who teach analytical techniques can make an invaluable contribution to their organizations by helping users develop better, longer lasting applications.

Analytical techniques help users think systematically about business problems before they develop an application. These techniques offer a step-by-step approach to thinking about the immediate and long-term implications of the applications. There are three techniques that trainers can easily incorporate into their programs:

Problem analysis. This analysis poses questions that help provide a clearer picture of the nature, scope and complexity of the problem. It revolves around business issues and is independent of any particular computer application. The questions that arise fall into several categories, including the following:

- **Business:** What factors contributed to this problem? What business issues may cause the problem to grow or change significantly?
- **Cost:** What is the current financial impact of the problem? How does it compare with the cost of the application?
- **Timing:** What would be the effects, both desirable and undesirable, of waiting a week, month or year to resolve the problem?
- **Risk:** What does the problem entail that is so new, different or complex that trying to devise a computer solution might pose a significant risk?

Solution analysis. It isn't enough to analyze the problem;

users must analyze solutions, too. One way to conduct this analysis is to consider the pros and cons of an application. For example: What's good? What will this application make it possible to do faster, cheaper or better? What less-than-obvious benefits might this application generate? In what ways could it set the stage for other efforts that would otherwise be impossible?

What's not so good? In what ways might this application adversely affect employees or technical resources? What expectations might it create that could be difficult to satisfy? In what ways might

it backfire?

Developers may find the answers to some of these questions obvious or intuitive. Other questions may require thought and digging. Either way, merely by reviewing the questions, users can reveal overlooked factors or gaps in their thinking that could lead them to a better application — or possibly a decision to fore-



go the project.

For problem and solution analyses, the training staff can formulate sample questions for use in class. To promote user acceptance of these techniques, classes can also include exercises that require users to formulate relevant questions. Users who have thought about these questions in the classroom are more likely to consider them in developing their own applications.

Three-minute analysis. This technique is one that I've adapted from *De Bono's Thinking Course*, a book by Edward de Bono (Facts on File Publications, New York, 1985). De Bono asserts that one of the biggest problems with analytical thinking is that people often use it to back up an opinion that they have already formed. To think objectively about an idea or issue, first spend a minute itemizing its good points, then a minute itemizing its bad points, then a minute itemizing points that are neither good nor bad but simply interesting.

This technique, done under an instructor's guidance, can be an effective means of ensuring well-rounded thinking. The technique can be used, for example, to direct attention to the negative aspects of an approach that seems like an obvious solu-

tion. It can also highlight positive aspects of an idea that students are quick to dismiss. The exercise leads to a broader view of an issue than the I-know-what-I-know attitude, which can limit problem-solving.

This technique quickly demonstrates that no approach is totally problem-free — and that few ideas are totally without merit. Once users have discovered the technique in the classroom, they can be encouraged to use it on the job to challenge their own ideas or the ideas of their co-workers.

These three techniques are likely to be overkill for simple spreadsheets. But as user-developed applications grow in complexity and importance, applications that work right — and continue to work right — are becoming as important for end-user computing as they are for large-scale information systems.

Users who learn techniques for analysis will stand a better chance of developing applications that work. The techniques are not only for users; trainers should also find them helpful in devising effective solutions.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."

COMPUTERWORLD's May/June Training Editorial Topics

28 Training Plus; Activities to hold before and after training to enhance effectiveness

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Managing the Network
Ad Close: May 22

4 Pros and cons of in-house and outside training

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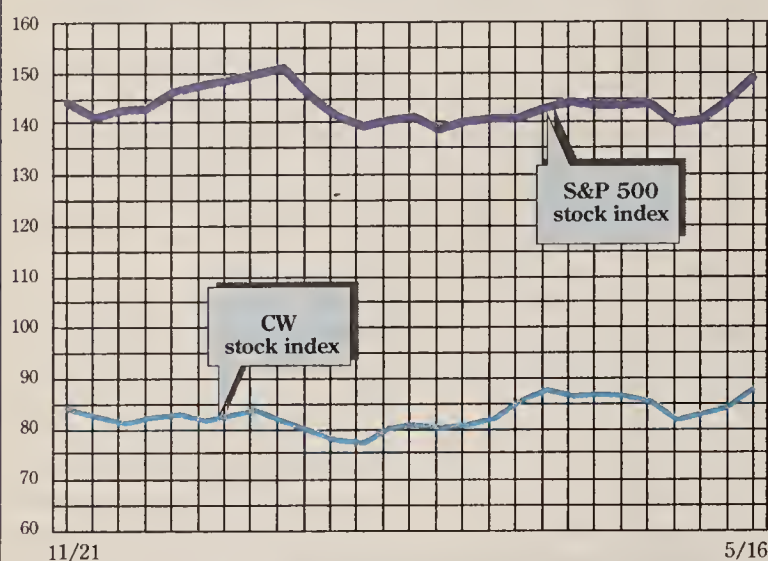
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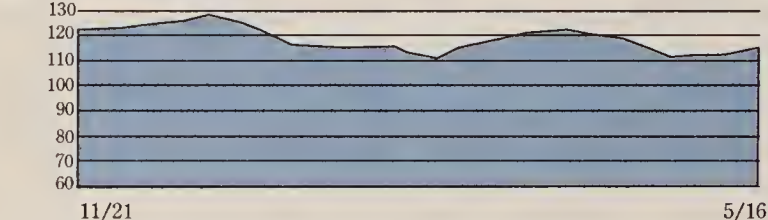
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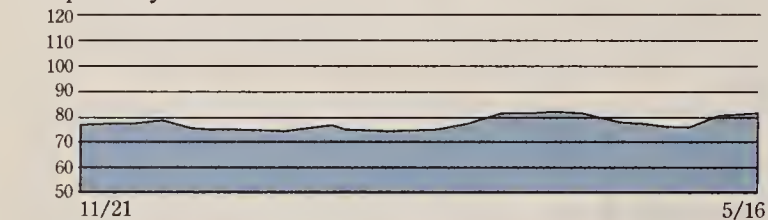


Indexes	Last Week	This Week
Communications	112.3	116.9
Computer Systems	80.2	81.3
Software & DP Services	120.6	122.8
Semiconductors	57.8	61.5
Peripherals & Subsystems	83.9	85.5
Leasing Companies	86.8	88.8
Composite Index	84.8	87.4
S&P 500 Index	144.5	149.2

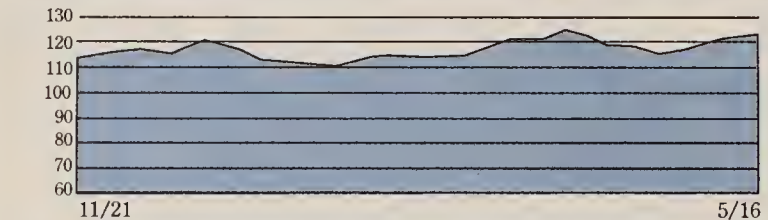
Communications



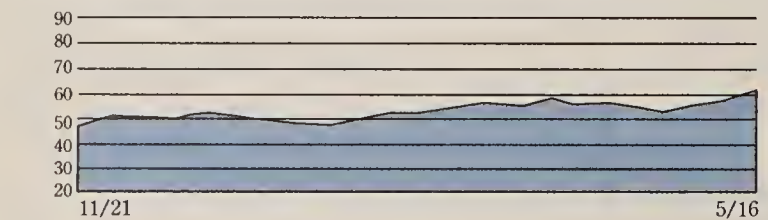
Computer Systems



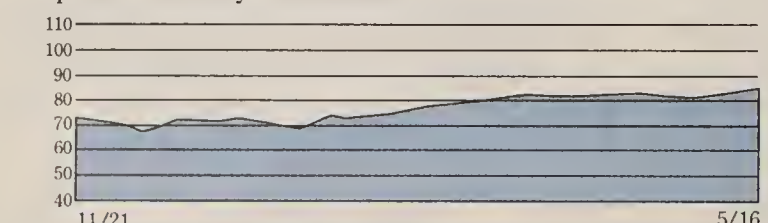
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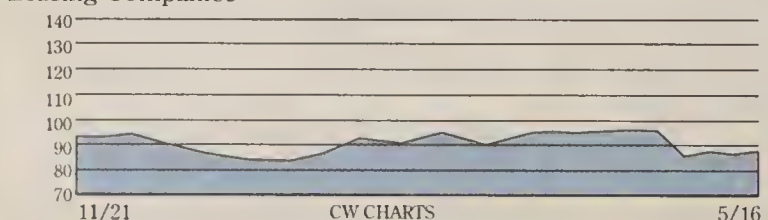
Semiconductors



Peripherals & Subsystems



Leasing Companies



Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 16, 1990

E X C H		52-WEEK RANGE	PRICE		WEEK NET CHNGE	WEEK PCT CHNGE
			CLOSE MAY 16, 1990			

Communications and Network Services

N	AMERICAN INFO TECHS CORP	68	55	63.5	2.5	4.1
Q	ANOREW CORP	26	20	23.5	0.0	0.0
Q	ARTEL COMM CORP	10	5	5.5	-0.8	-12.0
Q	AT&T	47	34	42.75	2.3	5.6
Q	AVANTEK INC	7	2	3	0.0	0.0
N	AYDIN CORP	21	14	14.25	-0.4	-2.6
N	BELL ATLANTIC CORP	57	42	52.5	2.8	5.5
Q	BELLSOUTH CORP	59	46	56.625	1.6	3.0
Q	COMPRESSION LABS INC	15	7	11.125	-0.8	-6.3
Q	CONTEL CORP	37	23	27.5	2.5	10.0
Q	DATA SWITCH CORP	5	2	2.875	0.8	35.3
Q	DIGITAL COMM ASSOC	25	17	23.25	2.5	12.0
Q	ODYNATECH CORP	21	15	15	0.0	0.0
Q	FIBRONICS INTNL INC	8	5	7.375	0.5	7.3
Q	GANOALF TECHNOLOGIES	7	2	3.188	0.2	6.3
N	GENERAL DATACOMM INOS	7	3	3.625	0.3	7.4
Q	GTE CORP	72	52	65.875	1.6	2.5
Q	INFOTRON SYS CORP	13	4	4.25	0.0	0.0
Q	ITT CORP	65	51	56.5	3.8	7.1
N	M A COM INC	9	3	4	0.0	0.0
Q	MCI COMMUNICATIONS CORP	49	31	40.875	2.3	5.8
Q	NETWORK EQUIP TECH INC	34	9	11	0.3	2.3
Q	NETWORK SYS CORP	13	7	13	1.0	8.3
N	NORTHERN TELECOM LTO	26	17	25.75	0.9	3.5
Q	NOVELL INC	45	24	40	2.0	5.3
Q	NYNEX CORP	92	74	86.75	3.9	4.7
N	PACIFIC TELESIS GROUP	52	39	47.125	2.9	6.5
A	PENRIL CORP	7	4	6.25	-0.1	-2.0
N	SCIENTIFIC ATLANTA INC	25	17	24.75	2.0	8.8
N	SOUTHWESTERN BELL CORP	65	50	57.125	1.0	1.8
Q	3 COM CORP	28	10	12.875	1.1	9.6
N	US WEST INC	41	33	36.75	-0.1	-0.3

Computer Systems

Q	ALLIANT COMPUTER SYS	8	4	6.25	0.0	0.0
Q	ALPHA MICROSYSTEMS	8	3	2.875	-0.4	-13.2
Q	ALTOS COMPUTER SYS	8	5	5.375	-0.3	-4.4
A	AMDAHL CORP	23	11	15.125	1.0	7.1
Q	APPLE COMPUTER INC	50	32	41.5	-0.4	-0.9
Q	AST RESH INC	24	7	22.25	-0.8	-3.3
N	BOLT BERANEK & NEWMAN	9	4	4.75	0.5	11.8
N	COMPAQ COMPUTER CORP	115	73	114.125	8.0	7.5
N	COMMODORE INTNL	18	6	7.625	0.3	3.4
N	CONTROL DATA CORP	23	16	20.25	1.5	8.0
Q	CONVEX COMPUTER CORP	16	12	14.875	0.0	0.0
N	CRAY RESH INC	54	31	47.625	1.6	3.5
Q	DAISY SYS CORP	5	0	0.5	-0.1	-11.2
Q	DATA GEN CORP	19	8	9.125	0.0	0.0
Q	DATAPoint CORP	6	2	2.75	-0.3	-8.3
Q	DELL COMPUTER CORP	10	5	9.5	0.5	5.6
N	DIGITAL EQUIP CORP	103	70	88.375	0.6	0.7
N	FLOATING POINT SYS INC	4	0	0.813	-0.2	-18.7
N	HARRIS CORP	40	28	35.25	2.8	8.5
N	HEWLETT PACKARD CO	58	40	46.125	1.3	2.8
N	HONEYWELL INC	98	73	97.25	2.4	2.5
N	IBM	119	93	115.375	4.1	3.7
Q	INFORMATION INTL INC	16	12	11.875	0.0	0.0
Q	IPL SYS INC	14	5	10	0.5	5.3
N	MAI BASIC FOUR INC	7	2	2.625	0.0	0.0
N	MATSUSHITA ELEC INOL LTO	180	123	148	5.0	3.5
Q	MENTOR GRAPHICS CORP	25	14	23.25	0.0	0.0
N	NBI INC	3	0	0.281	0.0	0.0
N	NCR CORP	72	53	68.375	0.5	0.7
Q	PYRAMIO TECHNOLOGY	33	9	32.75	3.3	11.0
Q	SEQUENT COMP SYS INC	28	11	26.25	-0.3	-0.9
Q	SHAREBASE CORP	3	0	0.438	0.0	0.0
Q	SUN MICROSYSTEM INC	31	13	29.75	1.4	4.8
Q	SYMBOLICS INC	2	0	0.563	0.0	0.0
N	TANOEM COMPUTERS INC	30	16	26.625	1.1	4.4
N	TANOY CORP	49	30	33.875	2.1	6.7
N	ULTIMATE CORP	12	5	7	1.0	16.7
N	UNISYS CORP	28	12	13.875	-0.1	-0.9
A	WANG LABS INC	9	4	4.25	0.0	0.0

Software & DP Services

Q	AMERICAN MGMT SYS INC	16	11	14.375	0.6	4.5
Q	AMERICAN SOFTWARE INC	24	14	22	1.5	7.3
N	ANACOMP INC	8	3	3.125	-0.3	-7.4
Q	ANALYSTS INTL CORP	20	14	17.875	-0.4	-2.1
Q	ASHTON TATE	24	9	12.125	0.9	7.8
Q	ASK COMPUTER SYS INC	16	7	8.5	0.4	4.6
N	AUTO DATA PROCESSING	57	38	55.75	2.1	4.0
Q	AUTOODESK INC	50	33	50.25	2.5	5.2
Q	BMC SOFTWARE INC	26	12	25.5	2.3	9.7
N	BUSINESSLAND INC	14	7	9.25	0.5	5.7
Q	COGNOS INC	8	4	7	-0.1	-1.8
N	COMPUTER ASSOC INTL INC	22	11	15.125	0.4	2.5
Q	COMPUTER HORIZONS CORP	14	7	12.5	0.0	0.0
N	COMPUTER SCIENCES CORP	59	40	45.25	0.5	1.1
N	COMPUTER TASK GROUP INC	15	9	10.75	0.1	1.2
Q	COMSHARE INC	44	28	40.25	0.5	1.3
Q	CORPORATE SOFTWARE	16	8	13.5	-0.1	-0.9
N	GENERAL MTRS (CLS E)	35	24	33	-0.5	-1.5
Q	HOGAN SYS INC	7	4	3.875	0.0	0.0
Q	INFORMIX CORP	17	8	14.25	1.0	7.5
Q	INTELLICORP INC	7	3	6	-0.1	-2.0
Q	LEGENT CORP	32	19	22.25	-0.8	-3.3
Q	LOTUS DEV CORP	38	21	34.5	1.8	5.3
Q	MICROSOFT CORP	67	26	64.75	2.0	3.2
Q	NATIONAL DATA CORP	35	13	15.25	-7.3	-32.2
N	ON LINE SOFTWARE INTL INC	11	6	8.25	0.6	8.2
Q	ORACLE SYS CORP	28	14	18.625	0.5	2.8
Q	PANOSOPHIC SYS INC	19	10	12.625	1.3	11.0
Q	PHOENIX TECHNOLOGIES INC	15	2	2.938	0.1	2.2
Q	POLICY MGMT SYS CORP	38	28	36.75	0.5	1.4
Q	PROGRAMMING & SYS INC	23	16	22	0.0	0.0
Q	RELATIONAL TECH INC	11	5	7.375	-0.4	-4.8
N	REYNOLDS & REYNOLDS CO	34	19	21.5	0.4	1.8
Q	SAGE SOFTWARE INC	14	7	13.375	-0.4	-2.7
Q	SEI CORP	21	15	19.75	0.0	0.0
Q	SHAREO MEO SYS CORP	19	12	12.5	0.1	1.0
Q	SOFTWARE PUBG CORP	26	13	25.375	2.5	10.9
A	STERLING SOFTWARE INC	11	6	9.625	0.3	2.7
Q	SUNGARD DATA SYS INC	26	14	21.25	2.5	13.3
Q	SYSTEMATICS INC	45	30	44.25	3.5	8.6
N	SYSTEM CENTER INC	26	17	21.625	1.5	7.5
N	SYS. SOFT INC	29	14	23.5	1.3	5.6
Q	WOROSTAR	3	1	1.063	0.1	6.3

Semiconductors

N	AOV MICRO DEVICES INC	11	7	10	1.0	11.1
N	ANALOG DEVICES INC	12	7	7.625	0.4	5.2
Q	ANALOGIC CORP	11	9	9.625	-0.3	-2.5
Q	CHIPS & TECHNOLOGIES INC	26	15	20.75	2.0	10.7
Q	INTEL CORP	45	28	44.75	1.5	3.5
Q	MICRON TECHNOLOGY INC	26	7	15.375	1.8	12.8
N	MOTOROLA INC	77	50	74.125	1.5	2.1
N	NATL SEMICONDUCTOR	9	5	8	0.8	10.3
N	TEXAS INSTRS INC	47	28	40.625	5.0	14.0

A	WESTERN DIGITAL CORP	13	6	12.5	0.5	4.2
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Peripherals

Q	ALLOY COMP	3	0	1	0.4	68.4
N	AMINTL INC	6	2	2.5	0.1	5.3
Q	AUTO TROL TECH CORP	6	2	2.625	-0.3	-10.7
Q	BANCTEC INC	21	12	20.375	2.6	14.8
A	COGNITRONICS CORP	8	3	5.625	1.0	21.6
Q	CONNOR PERIPHERALS	24	10	22.375	1.1	5.3
A	DATAPRODUCTS CORP	15	5	9.875	0.1	1.3
A	DATARAM CORP	16	8	15	0.4	2.6
N	EASTMAN KODAK CO	52	36	40.375	2.3	5.9
N	E M C CORP MASS	7	3	5.5	-0.4	-6.4
Q	EMULEX CORP	11	4	5.125	-0.3	-4.7
Q	EVANS & SUTHERLAND	35	17	32.75	2.1	6.9
Q	ICOT CORP	3	1	1.25	-0.1	-4.8
Q	INTERLEAF INC	9	5	6.5	0.1	2.0
Q	IONEGA CORP	6	2	4.063	0.2	4.9
Q	LEE DATA CORP	4	1	1.313	-0.1	-4.5
Q	MASSTOR SYS CORP	4	1	1.313	0.0	0.0
Q	MAXTOR CORP	16	7	14.75	-0.4	-2.5
Q	MICROPOLIS CORP	7	3	5.375	0.3	6.2
N	MINNESOTA MNG & MFG CO	85	68	83.625	1.8	2.1
Q	PERSONAL COMP PRODUCTS INC	5	4	4.125	0.1	1.5
Q	PRINTRONIX INC	14	7	12.875	0.9	7.3
N	QMS INC	16	8	15.75	0.4	2.4
Q	QUANTUM CORP	18	7	17.875	1.4	8.3
N	RECOGNITION EQUIP INC	13	5	5.25	0.0	0.0
Q	REXON INC	9	6	8.875	0.1	1.4
Q	SEAGATE TECHNOLOGY	20	10	14.375	2.1	17.3
N	STORAGE TECH CORP	28	9	27.625	2.0	7.8
Q	TANON CORP	2	0	1.875	-0.1	-6.3
N	TEKTRONIX INC	24	12	12.625	-0.5	-3.8
Q	TELEVIDEO SYS INC	1	0	0.219	0.0	-12.4
N	XEROX CORP	69	46	49.875	1.6	3.4

Leasing Companies

Q	AMPLICON INC	17	7	7.75	-0.3	-3.1
N	CAPITAL ASSOC INTNL INC	8	3	3	-0.1	-4.0
N	COMOISCO INC	34	17	19	1.0	5.6
Q	CONTINENTAL INFO SYS	1	0	0.234	0.0	-6.4
Q	LOI CORPORATION	18	13	15	-0.5	-3.2
Q	PHOENIX AMERN INC	5	3	4.125	0.8	22.2
Q	SELECTERM INC	9	6	5.75	0.0	0.0

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Mirth day

Compaq, IBM's uplifting news results in many happy returns

What's the good word? Compaq Computer Corp., according to traders, who lifted Compaq shares 8 3/4 points to a new high of 118 3/4 by last Thursday's close. The good cheer also spread to IBM, which appeared to get a pat on the back from investors after it unveiled an improved switching system, pushing prices up 2 1/2 points to 116 1/2. Analysts' praise raised the ante on Texas Instruments, Inc., up 2 3/4 points to 41.

Traders weren't quite as kind to Hewlett-Packard Co. after learning that the firm's net income slipped, driving its stock down 1 3/4 notches to 45 3/4. New competition in the workstation market from Sun Microsystems, Inc. probably didn't do HP much good, but Sun's shares gained 3/4 of a point to close at 29 3/4. Digital Equipment Corp. may also have been Sun-burned; DEC dropped 1 1/4 points to 87 3/4.

Sun workstation beats \$5,000 mark

BY J. A. SAVAGE
CW STAFF

Sun Microsystems, Inc. may be the first vendor to offer a Unix-based reduced instruction set computing (RISC) workstation for less than \$5,000, but users should expect the floodgates for similar machines to open by the end of the year. Users and analysts see a growing market for this kind of computer — as long as software vendors make the applications available.

The workstation, called Sparcstation SLC, is not a workstation per se but a diskless terminal with the ability to add peripheral memory. Introduced last week, it is priced at \$4,995 but can cost as little as \$3,000 in quantity purchases, according to Ed Zander, vice-president of corporate marketing.

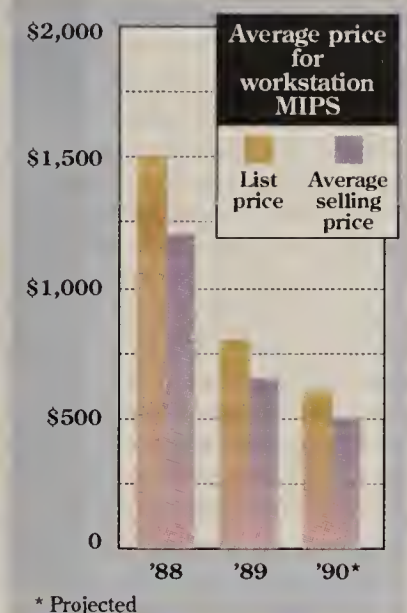
It comes with a monochrome monitor and runs at 12.5 million instructions per second (MIPS), according to the company. The CPU is mounted on the back of the display.

Unix workstation rivals Hewlett-Packard Co. and Mips Computer Systems, Inc. have both promised low-priced worksta-

tions. HP will have a workstation this summer "with more functions and performance," according to Karl Freund, workstation group marketing manager. Mips promises "lower cost devices" by 1991, according to Joe DiNucci, vice-president of desktop

Dipping MIPS

The average cost of workstation MIPS continues to decline



Source: Workgroup Technologies
CW Chart: John York

marketing strategy. Analysts said they expect to see Sun clones from several Pacific Rim companies by year's end.

Sun's Sparcstation SLC functions lie between a stand-alone workstation and an X-terminal display.

"It seems clear that Sun is attempting to shut the X-terminal window by lowering the price difference," said Andrew Allison, editor of "RISC Management Newsletter." He said that such a system is "doomed to failure" because X-terminal makers can and will lower their prices.

The diskless workstation is attractive in a corporate atmosphere to protect data, but users do not always appreciate it.

"In some cases, it's almost a religious issue," said Craig Eades, Unix group leader at the University of California Lawrence Livermore National Laboratory in Livermore, Calif., who added that some users insist on local memory.

For John Siefert, a manager at Hydro-Pac, Inc. in Fairview, Pa., the lack of local memory is only a concern in memory-intensive applications.

"It would be good in replacing

Low-priced Aviiion aired

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — Hoping to entice both users and low-end value-added resellers with lower price entry points, Data General Corp. trotted out four new reduced instruction set computing-based machines last week as part of its Aviiion computer family.

The new AV 200 workstation reportedly runs at 17 million instructions per second. With two asynchronous lines and a 20-in. monochrome monitor, it carries a base price of \$5,950. The entry-level AV 3200 server, capable of supporting as many as 18 asynchronous connections, lists

at \$12,995.

Both machines are based on a 16-MHz Motorola, Inc. 88100 processor and are targeted for software development, desktop publishing and commercial applications. Each can be configured with as much as 16M bytes of memory.

According to John Logan, vice-president at Aberdeen Group, a Boston-based consulting firm, DG is following the current price-cutting trend in the workstation arena.

Rounding out the new quartet of DG products are the AV 4100 and 4120. According to the vendor, both systems include 8M bytes of memory, a 332M-byte disk, a 150M-byte tape drive and an integrated Ethernet controller.

The systems are priced at \$21,545 and \$34,545, respectively.

an ASCII terminal to pull up [graphics], but I don't expect much performance in something like fluid dynamics," Siefert said.

One major drawback to gaining market share with the Sparcstation SLC is the lack of software, according to analysts. At the product rollout last week, Sun was heavily courting soft-

ware developers.

Sun also announced last week a new midrange server, the Sparcserver 470 and two software products. Sparcserver 470 runs at 22 MIPS and supports 98 terminals, according to the company. It can also be configured as a workstation for graphics applications.

DB2

FROM PAGE 1

what the market really wants."

Users at Depository Trust Co. in New York, which runs close to 2,000 programs in a DB2 environment, said the distributed features of DB2 Version 2, Release 2 allow only limited communication between databases. For example, a user in CICS cannot query a local database or update a remote database, according to Vincent Hilly, director of data administration.

"All the functionality is not there yet," said Hilly, whose shop was an early test site for the first release of DB2. "For our production environment, there's not a heck of a lot we can do with what they've given us."

In a keynote address to IDUG, George Zagalow, a manager of architecture and standards at IBM, said the company now offers a "partial" DB2 capability with single-site update. Although he did not provide a time frame, he said that with single-site update already in place, it would take "shorter steps to multisite updates."

The DB2 capability is one of the first steps in IBM's long-range plan to deliver distributed capabilities across the four IBM strategic operating systems: MVS, VM, OS/400 and OS/2. To date, IBM has delivered three initial pieces for like-to-like database communications. Besides DB2, IBM offers an SQL/DS-to-SQL/DS capability for VM users,

and it recently delivered this capability for OS/2 Extended Edition Release 1.2 users.

However, the more advanced distributed functions, which would link different IBM databases, are years away.

Tentative planning

So far now, many users are still sketching out what their distributed plans will be.

"There were 12 early support sites [for DB2] that made use of the distributed capability," said Paul Hessinger, vice-president of research and technology at Computer Task Group, Inc. in Buffalo, N.Y. "Beyond those, there is not a lot of demand yet."

"It's a little too early to decide on this," said Chuck Myers, an IDUG attendee and director of data resource development at Pacific Bell in San Ramone, Calif. "In the short term, there are so many other issues for us that distributed is on a back burner." Myers' site is running DB2 Release 2.1, and he said it plans to install Release 2.2 shortly.

John Merrell, vice-president of software and operating system services at Metropolitan Life Insurance Co. in New York, said his department is evaluating the distributing capability for use with DB2 databases installed at three data centers in the U.S.

"We are just at the state right now of determining how we might use [the DB2 distributed capability] and come up with some plans for it," Merrell said.

Another evaluation is under

way at Prudential Services Co. in Roseland, N.J. "We're not far enough along to worry about that," said Executive Vice-President Bill Friel. "We've got some DB2 up, but all our big databases are IDMS-driven. The major hurdle we face is migration."

Rite Aid Corp. in Harrisburg, Pa., is hoping to one day move to a distributed database environment, but it is a ways off, said

Bob Wall, Rite Aid's data resource manager and an IDUG director. The company runs DB2 as its only database management system at headquarters and is installing Personal System/2s in its retail locations. "Connectivity is the key word; it's critical," Wall said. Other users have begun testing the distributed facility or have plans to do so in the next month. "I'm counting on it

for some production applications downstream," said Hank Hamilton, director of information systems services at Shearson Lehman Hutton, Inc.

Hamilton said he expects to begin testing on the distributed capability "in a couple more weeks." The plan is to use it with minor applications and then attempt it with "a large-scale one about a year out," he said.

In search of the big picture

As DB2 matures, many of its customers are less preoccupied with its technical issues and more concerned with the bigger picture, said users and observers at the International DB2 Users Group (IDUG) meeting in Chicago last week.

"Last year, people wanted to talk about DB2 and the meat and potatoes, and now people are talking about organizational issues like [IBM's] AD/Cycle and cooperative processing," said Bob Wall, data resource manager at Rite Aid Corp. and a director of the user group, which held its second annual meeting.

Since DB2 was rolled out in the mid-1980s, IBM has — in steps — addressed the nagging poor performance issue and added necessary features. According to Earl Wheeler, IBM vice-president and general manager of programming systems, the company has now about 5,000 DB2 licenses.

In a speech last month, Wheeler said the current DB2 can now process nearly

300 complex transaction/sec. and almost 450 simple transaction/sec.

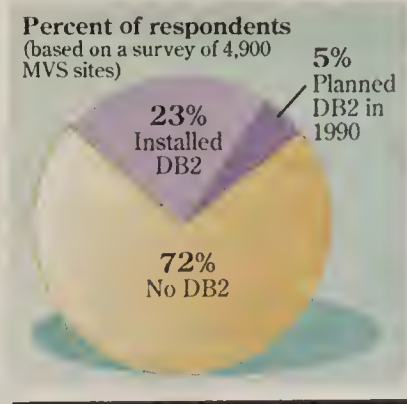
While IDUG provided seminars on such nuts-and-bolts topics as changing a DB2 table, some users seemed particularly interested in seminars on computer-aided software engineering and AD/Cycle, IBM's application development architecture that will use DB2 as its database engine. Some attendees discussed overall information systems architectures being planned or built at their companies. In those cases, DB2 is only a piece of a much bigger project.

Pacific Bell has a project under way for an architecture to govern data, applications and computing platforms, according to Chuck Myers, director of data resource development. The company, which runs a DB2 environment supporting 300G bytes of direct-access storage device, also has several other databases.

ROSEMARY HAMILTON

Grand design

IBM's DB2 has shown up in almost one-fourth of all MVS sites in the U.S.



Source: Computer Intelligence
CW Chart: John York

NEWS SHORTS

Toshiba admits disk woes

Users of some Toshiba T1000SE notebook personal computers face a potential disk drive cable failure, according to Toshiba America Information Systems, Inc. The cable is easily fixed and poses no danger to the user, according to the company. Customers can call 800-999-4273 to find out if they are affected.

Zenith to bundle Windows

Zenith Data Systems is expected to announce tomorrow that it will factory-install Microsoft Corp.'s Windows 3.0 on the hard disks of all its Intel Corp. 80286- and 80386-based PCs. Zenith is also bundling Microsoft's mouse and DOS 4.0 on the PCs, all at no extra charge, Zenith said.

More Windows open

Another company joining the Windows 3.0 parade, Tektronix, Inc., plans to announce today a color printer that will create transparencies and color posters for business presentations designed under Windows 3.0. The new Phaser PX, which supports the Adobe Systems, Inc. Postscript fonts, uses thermal wax-transfer technology to print color "posters" at 300 dot/in. The \$8,000 printer can be plugged into several networks at once, so that it can be shared among work groups. Among the network types supported are Ethernet, Apple Computer, Inc.'s Appletalk, Novell, Inc.'s Netware and 3Com Corp.'s local-area networks.

Parcplace ships object tool

Parcplace Systems, Inc. said last week that it was shipping a version of its object-oriented Objectworks for Smalltalk-80 programming language for the Hewlett-Packard Co. Apollo workstation platform under Unix. The \$3,500 package can be used by software developers and information systems shops to develop object-oriented code that can be run on multiple platforms. Parcplace has already ported Objectworks to Digital Equipment Corp.'s Decstation, Sun Microsystems, Inc.'s workstation line, Apple's Macintosh and IBM's MS-DOS version of Personal System/2.

Wang tops off 386 line

Wang Laboratories, Inc. last week unveiled the PC 380/33C, a 33-MHz zero-wait-state processor that the company is billing as the fastest and most powerful member of its Intel 386-based product line. According to the vendor, the base unit is priced from \$5,995, which includes an eight-slot chassis, 1M byte of memory, 64K bytes of cache memory, one parallel and two serial ports and a 1.2M- or 1.44M-byte disk drive. The system is scheduled to ship next month.

Promote OS/2, but at what cost?

Lotus Development Corp. and IBM have teamed up on the Lotus 1-2-3/G Bonus Pack promotion, which consists of 1-2-3/G, IBM's OS/2 Standard Edition Version 1.2 and 4M bytes of memory for IBM PS/2 users. Although the package, designed to boost OS/2-related sales, will be available from certified IBM resellers June 5 through Aug. 31, it is unclear how much of a price saving users can expect, as neither company would disclose the suggested retail price. Reseller sources said it would likely be available for under \$1,100.

Automated library for VAX

DEC and Storage Technology Corp. announced plans to tailor the Storage Tek automated tape cartridge library to DEC VAX systems. However, an availability date was not provided. The Storage Tek device, called the 4400 Automated Cartridge System and originally designed for IBM mainframes, has been licensed by several vendors to date, including Unisys Corp. and Fujitsu Ltd. The company has also installed more than 1,000 units from direct sales.

Utility tests ISDN in customer service

BY CLINTON WILDER
CW STAFF

HARTFORD, Conn. — Northeast Utilities joined the ranks of Integrated Services Digital Network (ISDN) users this month with a pilot automatic number identification application for its customers in Waterbury, Conn.

After approval early this month by the Connecticut Public Utilities Commission, Northeast is beginning the application for 60,000 Waterbury customers. When a customer calls Northeast for any reason, the customer's phone number, address and billing name will appear on the service representative's terminal.

Automatic number identification is becoming a more common application with 800 numbers, but it is rarely used with local calling. It has raised issues of privacy, and some states have passed laws restricting its use. Connecticut is not one of them, however [CW, Feb. 7].

Northeast is the first Southern New England Telephone Co. customer to use the identification method, according to Tod O. Dixon, vice-president of the information resources group at Northeast.

Northeast officials and Con-

necticut regulators will evaluate the success of the pilot after six months. "We believe we'll reduce the time it takes to handle the average call and the waiting time on hold," Dixon said. "We're looking to handle more calls with the same number of people and give the customers better service at less cost."

The system will help Northeast prioritize which calls to answer, Dixon said. A customer site with an electric life-support system such as an iron lung, for example, could have its call answered first.

Northeast now runs smaller ISDN applications internally, but the automatic number identification system is the first external application and marks the first ISDN link between Northeast's Northern Telecom, Inc. SL-1 private branch exchanges (PBX) and Southern New England Telephone's central-office switch. It is also Northeast's first use of the ISDN Primary Rate Interface.

The ISDN application sends the customer phone number from the PBX to a database on an IBM 3090 Model 500S in Northeast's Wethersfield, Conn., data center, then downloads the customer file to a terminal in the



Northeast's Dixon is hoping for faster response time

Waterbury service center.

Northeast also plans to pilot an ISDN-based outage notification application later this year.

Windows 3.0 begins to draw in former OS/2-only crowd

BY CHARLES VON SIMSON
CW STAFF

NEW YORK — The personal computer glitterati will gather in Carnegie Hall this week to ooh and ah over Microsoft Corp.'s Windows 3.0. But just as prominent as the revelers will be the guys outside, apologizing for not confirming their reservations to the party.

"We sank a lot of money into OS/2 development," said Nathan Harper, general manager of the document management group at Software Publishing Corp., one of several firms that previously spurned Windows and focused solely on OS/2 and its Presentation Manager interface. "Frankly, the interest in Windows snuck up on us, and as it started to gain, we were still committed to DOS and OS/2 Presentation Manager."

So anxious was Software Publishing to get in on the Windows momentum that last week it announced the acquisition of Windows technology from Atlanta-based Samna Corp. Software Publishing will use Windows technology from Ami, Samna's word processing software, to develop Windows versions of its own applications.

"We still have to do a lot of work on their technology, but we will have a product in 1991," Harper said. "The Windows wave is really going to crest [this] week, and I think we will have time to get to market."

Software Publishing was not alone in its slightly nervous haste. Lotus Development Corp., the most prominent OS/2 applications proselyte, announced recently that it would back off its exclusive commitment to OS/2 as a graphical platform and develop a version of its 1-2-3 spreadsheet for Windows. Wordperfect Corp. is also saying that it will bite the bullet and produce a Windows version of its word processing package.

Missed the boat?

Ashton-Tate Corp. executives, who said they have a Windows product now in development but will not disclose its ship date, deny they have missed the boat. "Maybe it isn't the best thing in the world for the industry to get behind one standard," said Joe Brilando, Ashton-Tate's applications marketing vice-president. "We are thinking there may be other interfaces."

But Windows 3.0 did not sneak up on everybody. Comput-

er Aided Management Corp., a firm that has produced minicomputer, mainframe and personal computer project management tools, saw Windows 3.0 as the first viable iteration of the project for its application. The firm is scheduled to introduce its first Windows application next week.

"We liked Windows when it came out, but it required too much of a compromise; you could either go for performance or go Windows," said Zane Schafer, vice-president of marketing at Computer Aided Management. "But we were in early, and Windows 3.0 saved us. It eliminates the need to trade off."

What had been a lazy interface idea that spurred only moderate interest for four years is now the hottest thing around. While the Windows momentum is likely to have serious implications for OS/2, do not expect too much introspection from the announcement participants.

"All the scenarios have been hashed and rehashed, but we are committed to Windows," said Webb McKinney, general manager at Hewlett-Packard Co.'s Santa Clara Information Services Division, the group responsible for New Wave. "The technical improvements of the latest version are significant, and where Microsoft used to be the only major Windows player, today we benefit from the enthusiasm of the [independent software vendor] community."

Regulators sitting on info services

BY ELISABETH HORWITT
CW STAFF

Businesses that stay aloof from the communications services actions of public utilities commissions (PUC) may be in for unpleasant surprises.

As recent cases have demonstrated, the PUCs need all the information they can get to pass fair judgments on the complex enhanced services filings that local carriers have been throwing their way. The business sector often bears the brunt when judgments go awry.

For example, the Oregon Public Service Commission (PSC) is currently at loggerheads with Oregon Bell about how and at what price the regional carrier should offer Integrated Services Digital Network (ISDN) services in the state. One bone of contention is Oregon Bell's determination to confine its ISDN services to its Centrex

users, at least in the short term. This unfairly shuts out "customers that have chosen not to take the telephone company's version of a PBX," said Edward Morrison, director of the PSC's telecommunications staff.

The second issue is that of cross-subsidization, or the fear that the phone companies will artificially generate low rates for competitive services while actually funding them from noncompetitive or monopoly service rates. Morrison said his group thinks Oregon Bell's proposed rates are unrealistically low.

One innocent bystander in this fracas is U.S. Bancorp, the user for whom Oregon Bell filed the tariff. The bank had completed a trial of Oregon Bell's Centrex-based ISDN service and was ready to order the regular service when the Oregon PSC stepped in and effectively put the offering on hold for months, according to Bancorp telecom-

munications analyst Lisa Hoesel.

Meanwhile, across the country, two PSCs made contradictory decisions on a Southern Bell Telephone and Telegraph Co. proposal to levy usage-based charges on any company providing information as a service to its customers — including banks, retailers and insurance companies — for special calling features such as call forwarding and message waiting. Such charges, which would not apply to the rest of the company's customer base, would mean an average increase of about \$135 per user per month for information providers and hence their users, said Sandy Weis, director of government affairs at Prodigy Services Co.

Georgia's PSC ruled against Southern Bell's proposed tariff, primarily because a group of enhanced services providers jointly presented to its staff the harmful effects it would have on their businesses, Weis said.

Florida's PSC initially approved Southern Bell's proposal as "an experiment in four locations," said the state's Public Service Commissioner, Tom Beard. Subsequent feedback from alarmed information service providers, however, "increased my level of understanding" and influenced the PSC to allow providers the option of a flat fee structure, Beard said.

Companies such as Prodigy said they are frustrated by the

lack of a coordinated facility to notify interested parties of pending PSC dockets. And even alert companies such as Prodigy have missed a few tariffs, such as a recent New York Telephone Co. filing for data-over-voice services that would be of great use to Prodigy customers but were priced out of their reach, accord-

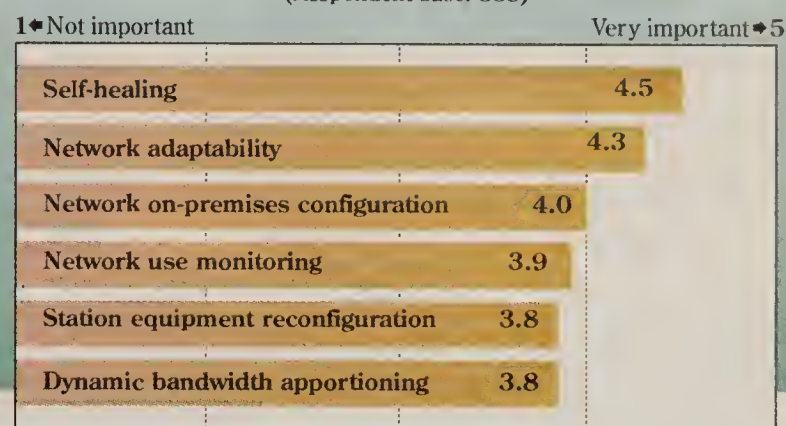
The companies that most need PUCs to go to bat for them — the small to medium-size businesses — have historically remained aloof from the decision-making process.

When the New York PSC recently prodded New York Telephone into setting up an ISDN trial, the business participants

Network punch list

Potential users of enhanced network services rate the most desired functions

Importance of intelligent network features
(Respondent base: 335)



Source: Frost & Sullivan, Inc.

CW Chart: John York

Put in your 10 cents

For businesses that would like to have more of a say in the new services and rates their local carriers are planning, the following are some avenues to try:

- The Information Industry Liaison Committee, set up by the Federal Communications Commission, is open to all parties that want to give input on the regional Bell holding companies' Open Network Architecture proposals. The group also discusses such issues as how to ensure that similar services offered by different operating companies have uniform rate structures and equipment interfaces. It has reportedly just started to discuss the creation of a system to dispense information about tariff submissions.
- User groups such as the International Communications Association (ICA) and the Committee of Corporate Telecommunications Users are represented by attorneys who regularly submit comments to the Federal Communications Commission and public utilities commissions about various pending regulations and tariffs. Such groups tend to focus on issues that concern the Fortune Service 500 companies that dominate the membership.
- The regional holding companies themselves have internal organizations whose purpose is to stay in touch with users' concerns. However, while some of these groups have real clout with their carriers, others are "just orphans" in the organization, according to Henry Levine, a partner at Morrison & Foerster.
- Part of the ICA's presentation at its conference this week will be a how-to session on forming one's own local ad hoc user group given by Michael Crampton, a telecommunications manager at The Travelers Corp. and a member of such a group.

ISDN

FROM PAGE 1

the fluctuations of high-rise building cycles.

But Swiss-based Schindler Holding Ltd., which recently acquired Westinghouse Elevator Co. in the U.S. and is the largest elevator maker worldwide, is preparing to go Otis one better with a soon-to-be released ISDN-based remote elevator-monitoring product called Servitel.

The advantage of using ISDN rather than ordinary dial-up connections is that it is possible to use one line to support two kinds of data connections between the elevator and the service center's

ing to Weis.

However, ordinary business users tend to stay away from the process altogether, "so their interests are adjudicated without their participation or input," said Walter Saprnov, an attorney at Atlanta law firm Basett, Gerry, Friend and Koenig. This is particularly dangerous because "some PUCs are just getting around to defining a public policy" pertaining to the new breed of enhanced services, he added.

were megacompanies such as Merrill Lynch & Co. and Shearson Lehman Hutton, Inc. Such companies do not really need ISDN, "because they can get what they want on a private network basis," said New York PSC Commissioner Eli Noam.

The smaller companies that would most benefit if New York Telephone finally introduced ISDN services "are relatively underrepresented at the PUC in these situations," Noam said.

computer, as well as a voice connection for benighted passengers to contact the service center, said Edward Hodgson, manager of computing and communications at the U.S.-based Schindler Elevator Corp.

Otis "has not at this point

Inc.-IBM joint venture.

Mechanics equipped with Ardis terminals "receive word of a trouble call electronically as a message on the device and record their results directly into the database," Ramm said. Previously, all mechanics entered

THE ADVANTAGE of using ISDN rather than ordinary dial-up connections is that it is possible to use one line to support two kinds of data connections between the elevator and the service center's computer.

considered using ISDN" in place of the dial-up connections for its elevator monitoring applications, according to David Ramm, director of information systems at Otis.

However, Otis is closer to implementation of a strategic communications application that both companies are seriously evaluating: the use of handheld, radio-frequency data terminals by service mechanics in the field. Otis, a United Technologies company, currently has mechanics in Los Angeles, San Bernardino, Calif., and Chicago using radio-frequency data service provided by Ardis, the Motorola,

their reports by telephone to an Otisline service center operator, who then entered the data manually into the database.

Mechanics can also use their terminals to call up the service history of the unit they are working on.

The pilot tests have gone well so far, but Otis has yet to finalize plans for a more widespread implementation, company spokesman Michael Jordan-Reilly said.

Schindler is currently negotiating with Ardis about implementing a system for its mechanics that would be similar to the one Otis has been testing, Hodgson said.

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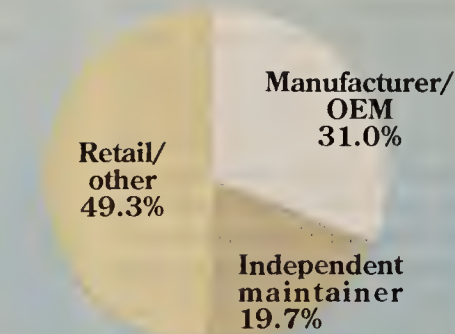


Personal Computer Maintenance

The reduction of PC prices has forced manufacturers and resellers to concentrate on their service contracts in hopes of increasing their profits. But are today's machines too reliable to bring in the desired revenue?

Competitive slice for all

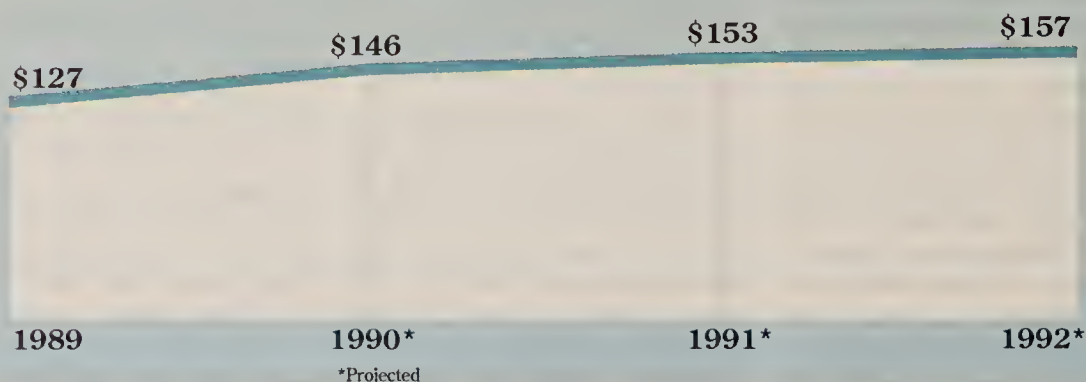
Percent share of total revenue
Because users tend to seek service where they purchased their equipment, retail stores, which are by far the leading distribution channel, will also be the largest providers of service.



1990 projected total: \$4.5B

Flattening rates

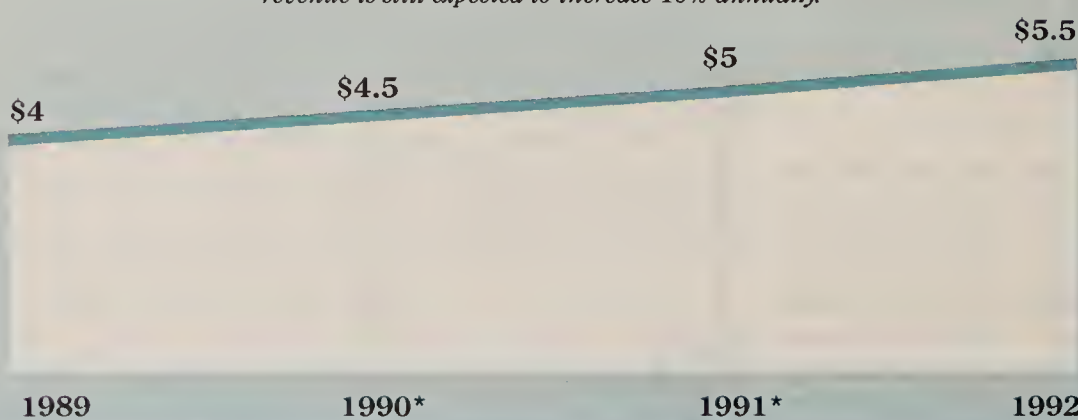
Average annual maintenance cost per system
The increasing reliability of personal computer hardware will force growth in service contract prices to level off in the '90s.



*Projected

Slow climb

U.S. hardware maintenance revenue** (In billions)
Although service prices won't be taking any stellar strides upward, revenue is still expected to increase 10% annually.



**Includes system unit and printer

*Projected

Source: International Data Corp., Framingham, Mass.

CW Chart: Tom Monahan

N E X T W E E K

It's assignment Paris for **Woody Franke**, a computer specialist who joined the State Department and was assigned to the City of Lights. You won't hear Franke complaining about his job as a systems manager at the U.S. Embassy. He likes history, languages, food and "just about everything cultural" about travel. See Manager's Journal.



Steve Murex/Blackstar

Life has a way of messing up even the best-laid plans, and that is a fact that network designers and managers need to keep in mind. In Executive Report, information systems and network managers talk about how you can prevent your communications plans from being derailed by unforeseen collisions with flesh-and-blood realities.

INSIDE LINES

International protocol

The possibility that Soviet President Mikhail Gorbachev might stop by the Soviet-Silicon Summit next month in Santa Clara, Calif., has raised the level of interest in the event. MCI, Bechtel, Seagate Technology, Lapis Technologies, Arthur D. Little, Genoa Systems and Bristol Research have all reserved seats. Who are the executives that the Man from the East is most likely to seek out? One source who is familiar with the Soviet Union's computer needs suggested Amdahl's Gene Amdahl, HP's John Young and David Packard, Apple's John Sculley and maybe 3Com's Bill Krause. What about Steve Jobs? Gorbachev is a communist — not a radical.

Next stop . . .

Eleven Soviet officials visiting Silicon Valley for the aforementioned summit will meet with local high-tech execs for 10 days before flying south to Disneyland for a day and a half. All things considered, it might be good for someone to tell the Soviets which is which.

Take a byte out of storage

Word from our British brethren last week was that IBM is evaluating Citizen's recently announced 20M-byte floppy disk drive for possible integration into one of its own machines, according to an OEM product manager at Citizen. The source at Citizen said negotiations with IBM are "pretty firm," although no contracts have been signed.

No hand-holding in Germany

Appointed in March, Ken Olisa, Wang's vice-president and general manager for Europe, Africa and the Middle East, is already crossing swords with Horst Enzelmüller, country manager for Wang Germany, according to a member of West Germany's Wang user group. According to the source, the deutsche marks are betting that Enzelmüller will soon resign. When asked whether this would have an impact on Wang's West German customers, the user said no, since Enzelmüller had never met with Wang users. Meanwhile, Wang President Rick Miller, who is pitching the get-close-to-the-customer message, was in Germany two weeks ago to meet with a hand-picked group of Wang users. However, no one saw fit to invite representatives from the user group, the user claimed.

Networking over a cup of tea

Novell is scheduled to unveil its much-anticipated Netware 386, Version 3.1, next Wednesday. The Provo, Utah-based networking company has planned an afternoon tea at its San Jose, Calif., digs for the announcement of the second phase of Netware 386.

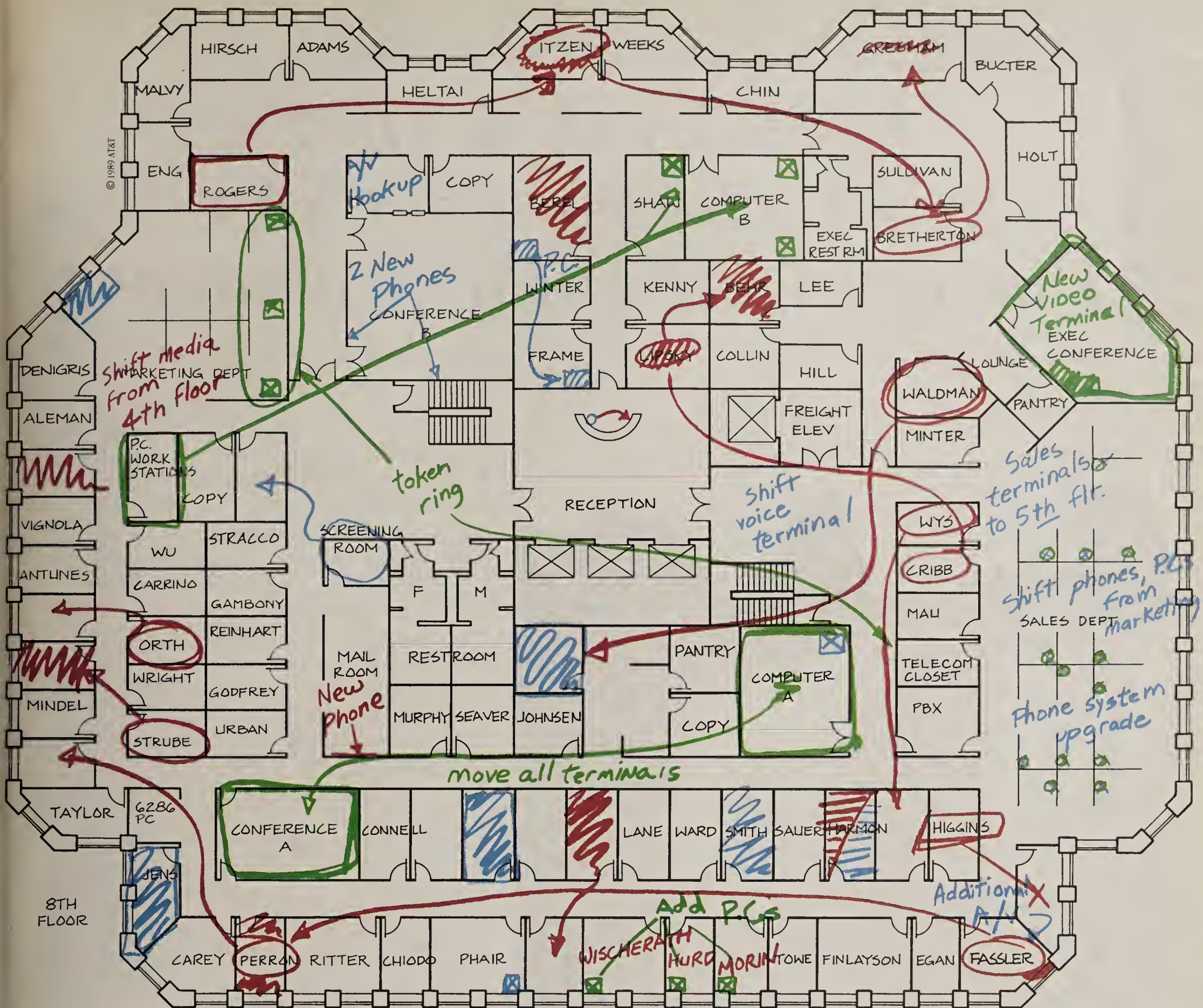
Network protocols tres complicated

We hear that Decorum member IBM is preparing to expand its Network File System (NFS) support to include, of all things, OS/2. Decorum is the group of vendors that managed to crowd out Sun's NFS in the Open Software Foundation's technology selection process last week (see story page 12). Of course, there are those who say IBM is only supporting the Open Software Foundation's work as a way to sow dissent in the Unix world and keep AT&T from achieving a true operating system standard.

Look, Ma — no fingers!

Nynex is now beta-testing its new voice-activated telephone in New York. The system allows a user to preprogram up to 10 voice-activated speed-dial phone numbers. For example, if a user programs in the phone number for "Mom," all he or she must do is pick up the phone and say, "Mom." Voices other than the programmed voice can also be identified, because the phone is designed to translate the order of the voice bits, not the pitch of the voice, a source said.

If you've been selected to test one of these voice-activated mechanisms, we suggest you program it for Computerworld's hot line, 800-343-6474, for rapid dispatch of your juiciest news tips. And you can still reach us by sending a fax to 508-875-8931 or messaging us as COMPUTERWORLD on MCI Mail.



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